Site Characterization Report – Tank Group 01

Former Philadelphia Energy Solutions Refinery
3144 West Passyunk Avenue
Philadelphia, Pennsylvania
Incident #56446

Prepared for

Philadelphia Energy Solutions Refining and Marketing LLC
111 S. Wacker Dr Suite 3000
Chicago, IL 60606

Prepared by

Terraphase Engineering Inc.
100 Canal Pointe Boulevard, Suite 108
Princeton, New Jersey 08540

February 2022

Project Number P044.001.002

terraphase engineering

Contents

Tables

Figures

Appendices

Acronyms and Abbreviations

25 PA Code	Title 25 Pennsylvania Code
Act 2	Pennsylvania Land Recycling and Environmental Remediation Standards Act
Act 32	Storage Tank and Spill Prevention Act
AOI	Area of Interest
AOI 8 RIR	Remedial Investigation Report, Area of Interest 8
AST	aboveground storage tank
B(a)P	benzo(a)pyrene
B(b)F	benzo(b)fluoranthene
bgs	below ground surface
COC	constituents of concern
the Facility	former Philadelphia Energy Solutions refinery facility
JD2	JD2 Environmental, Inc.
mg/kg	milligrams per kilogram
MSC	medium-specific concentrations
MTBE	methyl tert-butyl ether
Non-Res Soil DC	Non-residential Soil Direct Contact
Non-Res UA S-GW	Non-residential Used Aquifer Soil-to-Groundwater
North Yard	Point Breeze Refinery North Yard
PADEP	Pennsylvania Department of Environmental Protection
PESRM	Philadelphia Energy Solutions Refining and Marketing LLC
PID	photoionization detector
PRM	Potomac-Raritan-Magothy
RAP	Remedial Action Plan
RCRA	Resource Conservation and Recovery Act
the Report	Site Characterization and Remedial Action Completion Report
the Site	Tank Group 01 location within the former Philadelphia Energy Solutions refinery facility
SHS	Statewide Health Standard
SVOC	semi-volatile organic compound
Terraphase	Terraphase Engineering, Inc.
TGM	Technical Guidance Manual
TMB	1,2,4-trimethylbenzene
USEPA	United States Environmental Protection Agency
ug/L	microgram per liter
VOC	volatile organic compound
the Work Plan	Aboveground Storage Tank Closure Work Plan

Certification

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

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

I hereby attest that, as a Professional Geologist licensed in the Commonwealth of Pennsylvania, I am familiar with, and have reviewed and/or prepared the interpretation of the geology and hydrogeology presented in the attached report entitled, *Site Characterization Report – Tank Group 01, Former Philadelphia Energy Solutions Refinery, 3144 West Passyunk Avenue, Philadelphia, Pennsylvania*, dated February 2022.

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

Alexander J. Strohl, PG
Senior Staff Geologist

February 21, 2022
Date

1 Introduction

Terraphase Engineering, Inc. (Terraphase) has prepared this *Site Characterization Report* (Report), on behalf of Philadelphia Energy Solutions Refining and Marketing LLC (PESRM), to detail the results of the Site Assessment and Site Characterization activities at Tank Group 01 (the Site) which is located within the Former Philadelphia Energy Solutions refinery facility (Facility). The Facility, which is undergoing closure activities in preparation for redevelopment, is located at 3144 West Passyunk Avenue, Philadelphia, Pennsylvania (**Figure 1**). Remediation activities are being conducted at the Facility under the Pennsylvania Land Recycling and Environmental Remediation Standards Act ("Act 2") by both PESRM and Evergreen Resources Group, LLC (Evergreen) [1] in accordance with the 2012 Buyer-Seller Agreement and the 2020 First Amendment to that Agreement.

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

Tank Group 01 (**Figure 2**) is located within a larger area of the Facility referred to as the Point Breeze Refinery North Yard (North Yard). Evergreen is currently engaged in characterization and remediation work at the Facility under the Pennsylvania One Cleanup Program and oversight of the PADEP and the United States Environmental Protection Agency (USEPA) (eFacts PF No. 749898). In its associated documentation, Evergreen has identified the North Yard as Area of Interest (AOI) 8. The specific ASTs addressed in this Report include PB 663 (PADEP #074A), PB 666 (PADEP #043A), PB 668 (PADEP #008A), and PB 672 (PADEP #044A). These ASTs are part of the Facility's No. 3 Tank Farm.

Based upon the results of soil samples collected during the Site Assessment and a comparison to generic medium-specific concentrations (MSCs), no evidence of a release from PB 672 was identified. The Site Assessment outcome for PB 672 is "No Obvious Contamination – Sample Results Meet Action Levels." Based on the results of soil samples collected during the Site Assessment and a comparison to generic MSCs, potential releases of regulated substances to the environment from ASTs PB 663, PB 666 and PB 668 were identified. The Site Assessment outcome category for these ASTs is "No Obvious Contamination – Sample Results Do Not Meet Action Levels" and Terraphase submitted a Notification of Release to PADEP on June 23, 2021 (Incident #No. 56446). The notification indicated that unknown

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

amounts of petroleum-related substances were potentially released in Tank Group 01 from these specific ASTs. Copies of the notification documents are included in **Appendix A**.

Site Characterization soil sampling was subsequently performed in Tank Group 01 to adequately characterize the horizontal and vertical extent of concentrations greater than applicable MSCs.

This Report was prepared in accordance with Act 32 and 25 PA Code Chapter 245 (Subchapter D) and provides a summary of the Site Assessment and Site Characterization activities that were performed following the identification of potential releases to the environment during the demolition and removal the Tank Group 1 ASTs. It also demonstrates that adequate characterization has been performed to evaluate whether remedial action is warranted or whether attainment of the Statewide Health Standard (SHS) can be achieved.

Section 2 provides the site setting and includes:

- A description of the Site and operational/usage history of the ASTs;
- Information regarding site topography, geology, and hydrogeology;
- A summary of known past releases to the environment in the area and subsequent investigation and remedial activities to address these releases; and
- A summary of current and reasonably anticipated future land and groundwater use at and in the vicinity of the Site.

Section 3 discusses the standards selected for the attainment demonstration. Section 4 discusses the tank infrastructure and removal. Section 5 and 6 discuss the Site Assessment and Site Characterization, respectively. Section 7 provides an ecological screening evaluation and a summary of the Report and its conclusions are presented in Section 8.

2 Site Setting

The Facility, a former 1,300-acre refinery, is currently undergoing decommissioning to support redevelopment. The Site[2] is 8.7 acres in size and is located within the North Yard, an area that is also referred to as AOI-8 by Evergreen as part of their Resource Conservation and Recovery Act (RCRA) Corrective Action. The Site is located near the intersection of South 34th Street, Maiden Lane, and Schuylkill Avenue. Prior to demolition, Tank Group 01 consisted of four large ASTs (the subject of this Report), associated piping, open air support buildings, roads and containment berms. Except for the asphalt roadway that cuts through the central portion of Tank Group 01, and the tank foundations themselves, the area is not covered by hardscape.

The ASTs addressed in this Report are PB 663 (PADEP #074A), PB 666 (PADEP #043A), PB 668 (PADEP #008A), and PB 672 (PADEP #044A). Seven other ASTs were previously located within Tank Group 01 but were decommissioned and closed previously.

Figure 3 provides a layout of Tank Group 01.

2.1 Operational History/Usage of the Tanks

The Facility operated as a petroleum refinery between 1860 and 2019. The refinery ceased operations in 2019. The demolition and decommissioning of the subject ASTs began in December 2020. Prior to demolition, the primary products held within these tanks were: Heavy Gas Oil (PB 663 and PB 666), Light Cycle Oil (PB 668) and Vacuum Oil (PB 672). Additional details regarding the size, contents, and construction of the tanks are provided in **Table 1**.

2.2 Topography

Topography at the Site is generally flat except for containment berms constructed around the tank areas to provide containment in the event of a release. Regional topography slopes gently to the west towards the Schuylkill River, the nearest water body to the Site. The ground surface elevation at the Site is approximately 25 feet (ft) above mean sea level[3].

2.3 Regional Geology and Hydrogeology

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

[2] Tank Group 01 consists of a tank farm referred to by the Facility as the No. 3 Tank Farm.

[3] North American Vertical Datum of 1988 (NAVD 88).

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

The sedimentary record near the property consists of a complex series of water-bearing sand units which can comprise one or more hydrostatic units. Historical investigations conducted at the Facility have identified two saturated zones, including an unconfined shallow groundwater unit (occurring within the Holocene and Trenton Gravel deposits) and a deep groundwater unit known as the Farrington Sand, which is part of the PRM aquifer system. The deeper groundwater unit is separated by a clay unit; as such, the deeper groundwater has been classified as a semi-confined aquifer. Groundwater is first encountered generally at the Facility at a depth approximately 15 to 20 ft below ground surface (bgs) (Stantec 2017). **Appendix C** provides select figures from the *Remedial Investigation Report, Area of Interest 8* (AOI-8 RIR) for reference including, Figure 2-7 which provides a detailed cross section of the area.

2.4 Local Geology

During the Site Assessment and Site Characterization, soil at the Site was primarily investigated within the upper 5 ft, although certain Site Characterization borings were advanced to a maximum depth of 15 ft. Except for the borings installed along the berm in the southwest portion of Tank Group 01, anthropogenic fill ranging from 4 to 14 ft thick was encountered in each of the soil borings. Soil beneath the fill layer generally consists of brown sand, clay, and silt.

Groundwater was not encountered during the Site Characterization. Although groundwater was not encountered, groundwater has historically been interpreted to flow to the southwest toward the Schuylkill River.

2.5 Known Past Releases to the Environment

The presence of chemicals in soil above applicable MSCs in the Tank Group 01 area may be associated with recent or historical releases from the ASTs or other potential sources unrelated to the ASTs. This section provides a discussion of the past releases and potential other sources of contamination.

As recognized by PADEP (2018), much of the Facility is covered by anthropogenic fill with some of the fill areas exhibiting fill material as deep at 50 ft bgs. Because of this, the presence of some metals and semi-volatile organic compounds (SVOCs) may not be a result of release from the Facility and vertical/horizontal delineation to MSCs may be difficult.

The AOI-8 RIR (Stantec 2017), prepared on behalf of Evergreen, notes evidence of a historical landfill in the northern portion of AOI-8, south of the current Propane Loading Rack. The AOI-8 RIR explains that aerial photographs circa 1930, and shallow soil sampling suggests that the area may have been used for the disposal of smelter slag. That the former[4] Philadelphia Energy Solutions (PES) North Yard Ball Field, also located in the northern area of AOI-8, was identified by USEPA as the former location of a lead smelter known as Metallurgical Products Company.

From Figure 1-3 From Stantec's (2017) RIR for AOI-8 illustrating the area of a historic landfill and lead smelter in AOI-8 in proximity to Tank Group 01

The AOI-8 RIR identified three potential historical releases from ASTs in the area of Tank Group 01 (Incident Nos. 5912, 34422, and 46786). According to PADEP (2018), these incidents have been closed. However, Incident No. 46786 (PB 663), which involved a release of gas oil from PB 663 in 2011, required the development of a Remedial Action Plan (RAP) given the concentrations of lead and benzo(a)pyrene (B(a)P) identified in soil. According to PADEP (2017a), the RAP for this incident will be incorporated into an Act 2 Cleanup Plan to be submitted by Evergreen at a future date.

An additional prior release from PB 666 (Incident No. 45079) was identified and reported to PADEP on April 20, 2013. A letter from PADEP to PESRM dated January 14, 2014, indicated that PESRM had met its corrective action obligations for this incident.

2.6 Pre-existing Contamination

Environmental sampling has been conducted at the Facility since as early as 1992. This sampling has been associated with work associated with RCRA Corrective Action, the One Cleanup Program, and in response to identified releases to the environment, as summarized in Section 2.6. This section provides a summary of historical sampling results in and around Tank Group 01.

2.6.1 Soil

Historical sampling in Tank Group 01 has included surface (0-2 ft bgs) and subsurface (> 2 ft bgs) soil samples which have been analyzed for specific volatile organic compounds, SVOCs, and metals. As discussed in Section 1.5 of the AOI-8 RIR, the list of constituents of concern (COC) which are included in sampling performed by Evergreen as part of the Site-Wide Approach for the Facility under the One

[4] This ball field is no longer in use and PESRM is working with the users of the field to find an off-site location to host games.

Cleanup Program, are referred to as the Evergreen Petroleum Short List and Comprehensive List. The Comprehensive List, which encompasses the Petroleum Short List, is shown on **Table 2**.

As presented on **Table 3**, a comparison of the maximum detected concentrations of COCs in historical samples to applicable SHS MSCs and screening levels[5] indicates the following:

- Lead[6] and benzo(b)fluoranthene (B(b)F) at concentrations in surface soil greater than the Non-residential Soil Direct Contact (Non-Res Soil DC) MSCs for surface soil;
- No COCs in subsurface soil at concentrations greater than the Non-Res Soil DC MSCs for subsurface soil;
- Naphthalene, B(a)P, and lead in surface soil at concentrations greater than the Non-residential Used Aquifer Soil-to-Groundwater (Non-Res UA S-GW) MSCs; and
- Benzene, 2-methylnaphthalene, and lead in subsurface soil at concentrations greater than the Non-Res UA S-GW MSCs.

Table 3 summarizes additional information for these soil sampling results including frequency of detections, range of detected concentrations, and ratios of the maximum detected concentrations to the MSCs. **Figure 4a and 4b** present the spatial distribution of surface and subsurface soil concentrations, respectively, above these applicable MSCs. **Appendix B** provides tables of these historical soil sampling results.

Concentrations greater than MSCs indicate that additional evaluation is warranted to (1) determine if interim measures are necessary to abate an imminent hazard; (2) determine whether additional site characterization is needed to confirm the sources of contamination, determine the regulated substances involved and the extent of migration of those regulated substances in environmental media, and evaluate the fate and transport of these substances, if needed; (3) select a remediation standard; (4) perform a site-specific risk assessment if desired; and (5) as needed provide sufficient information to allow for the development of a remedial action plan or remedy design. The identification of concentrations greater than MSCs does not on its own indicate that an unacceptable risk to human health or the environment exists.

As summarized in Section 2.6, the presence of certain COCs in soil within the Tank Group 01 area above applicable MSCs will be subject to additional assessment and possibly remedial action under Act 2 (e.g., lead and B(a)P addressed via RAP under Incident No. 46786 at PB 663).

[5] Based upon current and reasonably expected future land and groundwater use, the applicable MSCs included Non-residential Soil Direct Contact MSCs (for surface and subsurface soil) and Non-residential Used Aquifer (total dissolved solids [TDS]≤2500) Soil-to-Groundwater Protection MSCs.

[6] In 2015 Langan, on behalf of Evergreen, submitted a Human Health Risk Assessment (HHRA) Report to establish a site-specific standard (SSS) for lead in soil at the Facility, the Belmont Terminal, and the SPMT Marcus Hook Industrial Complex. The HHRA was approved by the PADEP in a letter dated May 6, 2015, establishing a site-specific standard (SSS) of 2,240 milligrams per kilogram (mg/kg) for lead in soil which Evergreen is using to evaluate direct contact exposure to lead in soil as part of completing their remediation program under the 2012 Buyer-Seller Agreement.

With consideration for the closure of the Tank Group 01 ASTs, these historical sampling results have been considered in evaluating whether the soil sampling data generated during the Site Assessment and Site Characterization indicate evidence of new releases to the environment from the tanks, or whether the nature and extent of contamination identified during the Site Assessment/Site Characterization is consistent with known historical soil quality.

2.6.2 Groundwater

There are several groundwater monitoring wells that have been installed within and in the immediate surrounding area of Tank Group 01. This includes eight unconfined aquifer monitoring wells (N-2, N-3, N-5, N-6, N-10, N-137, N-145, and N-146). As discussed in the AOI-8 RIR, of the comprehensive list of site-related COCs identified to be present in groundwater, benzene has been chosen as the primary chemical (a qualitative proxy) for other COCs because of its water solubility, potential to be mobile in groundwater, and its persistence in groundwater at and near the Facility.

Figures from the AOI-8 RIR show the distribution of benzene and other COCs in groundwater near Tank Group 01. For expediency, copies of Figures 2-7, 6-1, 9-1, 9-2 and 9-3 of the AOI-8 RIR are included as **Appendix C**. Each has been amended to identify the location of Tank Group 01.

As shown on Figures 9-1 and 9-2 of the AOI-8 RIR, while there is a benzene groundwater plume that exists east of Tank Group 01, groundwater in and around Tank Group 01 is not impacted with benzene. Light non-aqueous phase liquid (LNAPL) has also been identified in wells east of Tank Group 01 as shown on Figure 6-1 of the AOI-8 RIR.

As shown on Figure 9-3 of the AOI-8 RIR, lead has been detected in unconfined shallow groundwater at concentrations greater than the SHS for Used Aquifers (5 micrograms per liter [ug/L]) near Tank Group 01 (locations N-5, N-6, and N-154). As noted in the AOI-8 RIR, the elevated lead concentrations in this area are likely attributable to the historic disposal of lead smelter slag observed in fill historically placed in the area and not associated with releases from the ASTs. Also, the area has historically been used for heavy fuel storage, not gasoline (Stantec 2013), further supporting a conclusion that the presence of lead is unrelated to the ASTs.

3 Selection of Standards

This section discusses planned land and groundwater use at the Site. It also discusses the standard selected by PESRM for Tank Group 01 and which MSCs have been identified as applicable based upon current and reasonably anticipated future land and groundwater use.

3.1 Land and Groundwater Use

As noted in the parcel map included in **Appendix D** and as captured in the conceptual imagery developed by Hilco Redevelopment Partners (https://www.thebellwetherdistrict.com/), the area encompassing Tank Group 01 is being redeveloped into a state-of-the-art, multimodal industrial park and life sciences campus with ancillary rail infrastructure, energy infrastructure, marine capabilities, and commercial uses. Current and reasonably anticipated future land use in the area of Tank Group 01 is non-residential. Following redevelopment, much of the area is also expected to be covered by hardscape (e.g., building pads, drive aisles, parking lots, roadways) or other features that will generally function as barriers to direct contact exposure.

The vapor intrusion exposure pathway is currently incomplete as there are no occupied structures in the area of Tank Group 01. As part of its redevelopment planning, PESRM plans to assess potential vapor intrusion exposure in areas where occupied buildings are planned. That assessment will evaluate whether conditions pose an unacceptable risk to future building occupants such that risk management action (e.g., remediation, vapor mitigation) is warranted. Because there is no current vapor intrusion exposure in this area, and because this future assessment is planned, vapor intrusion exposure in the Tank Group 01 area is not a current or reasonably expected future exposure scenario.

The water table aquifer is not used for a municipal or nearby communal potable water supply and future potable use of the water table aquifer is not reasonably expected. The PRM aquifer system is used as a water supply in New Jersey. As discussed in the *AOI-8 RIR* (Stantec 2017), the aquifers of that system, chiefly the lower sand unit, can receive recharge via vertical leakage through confining units and direct recharge from younger deposits along their subcrop area in south Philadelphia, which includes a portion of AOI-8. Evergreen is in the process of evaluating the potential for migration of dissolved phase groundwater contamination into, and along, the lower aquifer.

3.2 Selected Standard

PESRM has selected the SHS for Tank Group 01. Based upon current and reasonably anticipated future land and groundwater use at, and in the vicinity of, the Site, the following MSCs have been used to support the Site Assessment for applicable ASTs in Tank Group 01[7], and the subsequent Site Characterization for ASTs PB 663, PB 666, and PB 668:

- Non-Res Soil DC MSCs for surface soil and subsurface soil
- Non-Res UA S-GW MSCs

[7] Specifically, PB 663 (PADEP #074A), PB 666 (PADEP #043A), PB 668 (PADEP #008A), and PB 672 (PADEP #044A).

4 Tank Infrastructure and Removal

In accordance with the Work Plan, Northstar Contracting Group, Inc. and its subcontractor, JD2 Environmental, Inc. (JD2) – a PADEP-certified Aboveground Field Constructed Storage Tank System Removal (AFR) contractor, were retained by PESRM to perform tank demolition and handling, including (1) hazard recognition and abatement; (2) removal and handling of vapors, product, wastewaters, and accumulated sludges; (3) overseeing or verifying cleaning of the storage tank system; (4) dismantling the AST; and (5) removal of ancillary equipment and piping. The demolition of PB 663 (PADEP #074A), PB 666 (PADEP #043A), PB 668 (PADEP #008A), and PB 672 (PADEP #044A) was completed in March 2021. During the removal, it was determined that PB 666 had a double bottom (steel). PESRM retained ENTACT to remove the double bottom at PB 666. Removal was completed in January 2022, overseen by JD2.

JD2 did not identify any evidence of releases to the environment during the AST removal. On behalf of PESRM, JD2 submitted to PADEP the required notification forms and tank registration amendments, copies of which are provided as **Appendix E**.

5 Site Assessment

This section discusses the sample collection methods and sample analyses performed during the Site Assessment. The sampling was completed by Ransom Consulting, LLC and their subcontractor Probe Lease.

As discussed in the Work Plan, when no evidence of a release to the environment was identified during AST removal, ASTs were subject to Site Assessment sampling using a grid-based approach with additional biased samples at the locations of pipe connections or other key infrastructure. Groundwater was not encountered and there was no visual evidence of obvious contamination during the Site Assessment. Sampling began on May 18, 2021, and was completed on January 17, 2022, following the removal of the double bottom at PB 666.

In total, 69 soil borings were installed and 71 soil samples were collected during the Site Assessment. **Figure 5** shows the location of each of the Site Assessment soil borings.

5.1.1 Sample Collection Methods

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

Soil borings were completed using direct-push (i.e., Geoprobe) drilling or hand auger methods and advanced through the top 5-ft of soil. Continuous soil cores were collected, and field screened using a photoionization detector (PID) to identify potentially impacted zones. Soil sampling intervals were selected based on the results of field screening (i.e., staining, odors, and elevated PID readings). Where potentially impacted materials were not encountered, discrete samples were collected from native soil at a depth of 3.0-3.5 ft bgs consistent with the Confirmatory Sampling Protocol detailed in PADEP's (2017b) *Closure Requirements for Aboveground Storage Tank Systems*. Where fill was observed, samples of the fill were collected if it consisted of soil or soil-like material. Groundwater was not encountered.

Appendix F provides copies of the soil boring logs.

5.1.2 Sample Analyses

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

- **Short List 1**. *Leaded Gasoline, Aviation Gasoline and Jet Fuel*: benzene, toluene, ethyl benzene, xylenes (total), cumene, naphthalene, 1,2,4-trimethylbenzene (TMB), 1,3,5-TMB, 1,2-dichloroethane, 1,2-dibromoethane, and lead.

- **Short List 2**. *Unleaded Gasoline*: benzene, toluene, ethyl benzene, xylenes (total), cumene, methyl tert-butyl ether (MTBE), naphthalene, 1,2,4-TMB, and 1,3,5-TMB.
- **Short List 3**. *Kerosene, Fuel Oil No. 1*: benzene, toluene, ethyl benzene, cumene, MTBE, naphthalene, 1,2,4-TMB, and 1,3,5-TMB.
- **Short List 4**. *Diesel Fuel and Fuel Oil No. 2*: benzene, toluene, ethyl benzene, cumene, MTBE, naphthalene, 1,2,4-TMB, and 1,3,5-TMB.
- **Short List 5**. *Fuel Oil Nos. 4, 5, and 6, and Lubricating Oils and Fluids*: benzene, naphthalene, fluorene, anthracene, phenanthrene, pyrene, benzo(a)anthracene (B(a)A), chrysene, B(b)F, B(a)P, and benzo(g,h,i)perylene.

Volatile organic compounds (VOCs) were analyzed via USEPA Method 8260B. Samples for SVOCs were analyzed via Method 8270C. Samples for lead analysis were analyzed via USEPA Method 6010B.

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

5.1.3 Sample Results

Site Assessment soil sampling results were compared to the applicable MSCs[8] identified in Section 3.2 to help identify potential releases to the environment from the ASTs and their associated piping. **Figure 5** identifies the Site Assessment sampling locations where COCs were identified at concentrations greater than the applicable MSCs. The screening evaluation identified six COCs in soil at concentrations greater than these applicable MSCs (i.e., benzene, toluene, naphthalene, B(a)P, B(b)F, and lead).

PB 663

Nine samples (PB-663-11-SS01, PB-663-01-SS01, PB-663-02-SS01, PB-663-03-SS01, PB-663-04-SS01, PB-663-07-SS01, PB-663-09-SS01, PB-663-10-SS01, and PB-663-12-SS01) collected in proximity to PB 663 and its associated piping exhibited concentrations greater than one or more applicable MSCs. Lead was the only COC identified.

PB 666

Twelve samples (PB-666-03-SS01, PB-666-04-SS01, PB-666-01-SS01, PB-666-02-SS01, PB-666-06-SS01, PB-666-11-SS01, PB-666-12-SS01, PB-666-15-SS01, PB-666-16-SS01, PB-666-17-SS01, PB-666-20-SS01, and PB-666-21-SS01) collected in proximity to PB 666 and its associated piping exhibited

[8] As described in Section 4.2.2, soil sampling intervals were based on the results of field screening (i.e., staining, odors, and elevated PID readings). Where potentially impacted materials were not encountered, discrete samples were collected from native soil at a depth of 3.0-3.5 ft bgs, in accordance with PADEP's (2017b) *Closure Requirements for Aboveground Storage Tank Systems*. Since subsurface (> 2 ft bgs) soil samples were only collected from some locations during the Site Assessment, the comparison of the resulting concentrations to MSCs conservatively disregarded the surface/subsurface soil designation reflected in the Non-residential Soil DC MSCs. This approach was used to support Site Characterization decision-making and ensure that adequate characterization was performed.

concentrations greater than one or more applicable MSCs. COCs identified included benzene, toluene, naphthalene, B(a)P, B(b)F, and lead.

PB 668

Three soil samples (PB-668-03-SS01, PB-668-02-SS01, and PB-668-06-SS01) collected in proximity to PB 668 exhibited concentrations greater than one or more applicable MSCs. COCs identified above MSCs included naphthalene, B(a)P, B(b)F, and lead.

PB 672

None of the Site Assessment soil samples collected in proximity to PB 672 exhibited concentrations greater than the applicable MSCs.

Based upon the results, no evidence of a release from PB 672 was identified. The Site Assessment outcome for PB 672 is "No Obvious Contamination – Sample Results Meet Action Levels'" Based upon the results of soil samples collected during the Site Assessment and a comparison to generic MSCs, potential releases of regulated substances to the environment from PB 663, PB 666 and PB 668 were identified. The Site Assessment outcome category for these ASTs is "No Obvious Contamination – Sample Results Do Not Meet Action Levels."

The identification of concentrations in soil above applicable MSCs resulted in notifying PADEP of potential releases to the environment on June 23, 2021. PADEP assigned this notification to Incident No. 56446. Copies of the notification documents are included in **Appendix A**.

Appendix G provides the soil analytical results from the Site Assessment. Copies of the laboratory reports are included as **Appendix H**.

COCs Identified in Soil in Proximity to Tank Group 1 ASTs

PB663	PB66	PB668	PB672
Lead	Benzene Toluene Naphthalene B(a)P B(b)F Lead	Naphthalene B(a)P B(b)F Lead	None

6 Site Characterization

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

6.1 Site Characterization Plan

The identification of concentrations greater than MSCs means that additional evaluation is warranted to determine whether additional sampling or remedial measures are warranted. Based on the results of Site Assessment sampling (Section 5.1.3), a Site Characterization plan was developed. The objective of the Site Characterization was to delineate the horizontal and vertical extent of the potential releases until sufficient data were available to determine the need for interim or remedial measures.

6.2 Site Characterization Sampling

The Site Characterization scope included the installation of an additional 13 soil borings and the collection of an additional 39 soil samples. Several samples were collected at shallower (0-2 ft bgs) and deeper soil intervals (e.g., 6-6.5 ft bgs, 14.5-15 ft bgs) to vertically characterize the extent of COC concentrations in soil. The sample collection protocols, and the sampling analyses used during the Site Characterization were consistent with those used during the Site Assessment (Section 5) except that the sampling intervals and analytes were selected to achieve delineation of the exceedances identified during the Site Assessment. The sampling was completed by Ransom Consulting, LLC and their subcontractor Probe Lease.

Site Characterization soil sampling began on November 29, 2021 and was completed on December 1, 2021. **Figure 5** shows the location of each of the Site Characterization soil borings. **Appendix F** provides copies of the soil boring logs.

6.3 Site Characterization Results

Table 3 presents a comparison of the maximum detected COC surface soil and subsurface soil concentrations across Tank Group 01 to the applicable MSCs. The data summarized on Table 3 includes both Site Assessment and Site Characterization sampling results. With consideration for surface and subsurface soil, a comparison to applicable MSCs indicates the following:

- Lead in surface soil greater than the Non-Res Soil DC MSC for surface soil;
- Naphthalene in subsurface soil at concentrations greater than the Non-Res Soil DC MSC for subsurface soil;
- Lead in surface soil at concentrations greater than the Non-Res UA S-GW MSC; and
- Benzene, toluene, B(a)P, naphthalene, and lead in subsurface soil at concentrations greater than the Non-Res UA S-GW MSCs.

In summary, lead is the only COC in surface soil. Benzene, toluene, naphthalene, and lead are considered COCs in subsurface soil. The spatial distribution of these COCs in soil and their

concentrations relative to MSCs are shown on **Figure 5**. The following sections are organized by COC and discuss (1) why the data are sufficient to delineate the horizontal and vertical extent of impacts and support a reliable determination regarding the need for remedial measures with consideration for the selected standard (Section 3.2).

Appendix G provides the soil analytical results from the Site Assessment and Site Characterization. Laboratory reports are provided in **Appendix H**.

6.3.1 Benzene

As shown on **Table 3**, benzene was not detected in surface soil in the area at concentrations greater than applicable MSCs. The concentrations in surface soil ranged from non-detect to 0.028 milligrams per kilogram (mg/kg). Benzene was detected in subsurface soil at concentrations greater than the Non-Res UA S-GW MSC (0.5 mg/kg). The concentrations in subsurface soil ranged from non-detect to 5.8 mg/kg.

Only two locations exhibited benzene in subsurface soil at concentrations greater than the Non-Res UA S-GW MSC (0.5 mg/kg) - specifically, PB-666-11 (3.6 mg/kg, 3.5-4 ft bgs), and PB-666-20 (5.8 mg/kg, 3.5-4 ft bgs). Both samples were collected as part of the characterization of soil near PB 666 and its associated piping.

These boring locations are shown on **Figure 5**. **Figures 6a and 6b** provide an additional illustration of the spatial distribution of benzene in surface and subsurface soil, respectively, relative to the applicable MSCs. Tables with the soil analytical results are provided in **Appendix G**.

As shown on **Figure 6b**, the horizontal extent of benzene concentrations in subsurface soil above the Non-Res UA S-GW MSC (0.5 mg/kg) is delineated. Five borings (i.e., PB-663-06, PB-666-21, PB-666-17, PB-663-10, and PB666-19) horizontally delineated the extent of benzene in subsurface soil at PB-666-20 to the north, south, east and west. Likewise, four borings (i.e., PB-666-07, PB-666-12, PB-666-29, and PB-666-27) horizontally delineated the extent of benzene in subsurface soil at PB-666-11 to the north, south, east and west.

The vertical extent of benzene concentrations in subsurface soil above the Non-Res UA S-GW MSC (0.5 mg/kg) is also delineated. During the Site Characterization, a deeper sample, collected from 6-6.5 ft bgs in the vicinity of PB-666-20 did not exhibit a detectable concentration of benzene. Likewise, during the Site Characterization, a deeper sample, collected from 6-6.5 ft bgs in the vicinity of PB-666-11, exhibited a detectable concentration of benzene of 0.00088 mg/kg, below the applicable MSC. These sampling results demonstrate that benzene in subsurface soil near PB 666 has not impacted shallow groundwater in the area of Tank Group 01.

As shown on Figure 6b, benzene has been historically identified in subsurface soil in the southeastern corner of Tank Group 01 at concentrations greater than the Non-Res UA S-GW MSC (0.5 mg/kg), specifically at locations BH-13-666 and N-145. The presence of benzene in soil at these locations is unrelated to PB 663, PB 666, PB 668 or PB 672.

The nature and extent of benzene in soil near PB 663, PB 666, PB 668 or PB 672 has been adequately characterized to support a reliable determination as to whether the selected standard is attained or whether remedial action is warranted.

6.3.2 Toluene

As shown on **Table 3**, toluene was not detected in surface soil in the area at concentrations greater than applicable MSCs. The concentrations in surface soil ranged from non-detect to 0.071 mg/kg. Toluene was detected in subsurface soil at concentrations greater than the Non-Res UA S-GW MSC (100 mg/kg). The concentrations in subsurface soil ranged from non-detect to 1,500 mg/kg.

Only one location exhibited toluene in subsurface soil at concentrations greater than the Non-Res UA S-GW MSC (100 mg/kg); specifically, PB-666-20 (1,500 mg/kg, 3.5-4 ft bgs). This sample was collected as part of the characterization of soil near PB 666 and its associated piping.

This boring location is shown on **Figure 5**. **Figures 7a and 7b** provide an additional illustration of the spatial distribution of toluene in surface and subsurface soil, respectively, relative to the applicable MSCs. Tables with the soil analytical results are provided in **Appendix G**.

As shown on **Figure 7b**, the horizontal extent of toluene concentrations in subsurface soil above the Non-Res UA S-GW MSC (100 mg/kg) is delineated. Five borings (i.e., PB-663-06, PB-666-21, PB-666-17, PB-663-10, and PB666-19) horizontally delineated the extent of toluene in subsurface soil at PB-666-20 to the north, south, east, and west.

The vertical extent of toluene concentrations in subsurface soil above the Non-Res UA S-GW MSC (100 mg/kg) is also delineated. During the Site Characterization, a deeper sample, collected from 6-6.5 ft bgs in the vicinity of PB-666-20 exhibited a detectable concentration of toluene of 0.0062 mg/kg, below the applicable MSC. This sampling results demonstrates that toluene in subsurface soil near PB 666 has not impacted shallow groundwater in the area of Tank Group 01.

The nature and extent of toluene in soil near PB 663, PB 666, PB 668 or PB 672 has been adequately characterized to support a reliable determination as to whether the selected standard is attained or whether remedial action is warranted.

6.3.3 B(a)P

As shown on **Table 3**, B(a)P was not detected in surface soil in the area at concentrations greater than applicable MSCs. The concentrations in surface soil ranged from non-detect to 46 mg/kg. B(a)P was detected in subsurface soil at concentrations greater than the Non-Res UA S-GW MSC (46 mg/kg). The concentrations in subsurface soil ranged from non-detect to 140 mg/kg.

Only three locations exhibited B(a)P in subsurface soil at concentrations greater than the Non-Res UA S-GW MSC (46 mg/kg) - specifically, PB-666-11 (140 mg/kg, 3.5-4 ft bgs), PB-666-12 (90 mg/kg, 2.5-3 ft bgs), and PB-668-06 (76 mg/kg, 2.5-3 ft bgs). These samples were collected as part of the characterization of soil near PB 666 or PB 668 and their associated piping.

These boring locations are shown on **Figure 5**. **Figures 8a and 8b** provide an additional illustration of the spatial distribution of B(a)P in surface and subsurface soil, respectively, relative to the applicable MSCs. Tables with the soil analytical results are provided in **Appendix G**.

As shown on **Figure 8b**, the horizontal extent of B(a)P concentrations in subsurface soil above the Non-Res UA S-GW MSC (46 mg/kg) is delineated. Seven borings (i.e., PB-666-27, PB666-07, PB-666-09, PB-666-13, PB-666-14, PB-666-28, and PB666-29) horizontally delineate the extent of B(a)P in subsurface soil at PB-666-11 and PB-666-12 to the north, south, east and west. Likewise, four borings (i.e., PB-668-01, PB-668-05, PB-668-04, PB-668-07, PB-668-08, PB-666-14, and PB-666-10) horizontally delineate the extent of B(a)P in subsurface soil at PB-668-06 to the north, south, east, and west.

The vertical extent of B(a)P concentrations in subsurface soil above the Non-Res UA S-GW MSC (46 mg/kg) is also delineated. During the Site Characterization, deeper samples, which were collected from 6-6.5 ft bgs in the vicinity of PB-666-11 and PB-666-12, did not exhibit detectable concentrations of B(a)P that are greater than the Non-Res UA S-GW MSC (46 mg/kg). Likewise, a deeper sample, which was collected from 6-6.5 ft bgs in the vicinity of PB-668-06, did not exhibit a detectable concentration of B(a)P. These sampling results demonstrate that B(a)P in subsurface soil near PB 666 and PB 668 have not impacted shallow groundwater in the area of Tank Group 01. The estimated depth to groundwater in this area is approximately 16 ft bgs (Section 2.5) indicating that the soil buffer distance for B(a)P is achieved and that concentrations of B(a)P in soil meet the SHS with consideration for soil-to-groundwater protection.

As shown on **Figure 8a**, B(a)P has been historically identified in surface soil at location 663 Area-1 AOI8 at a concentration greater than the Non-Res UA S-GW MSC (46 mg/kg) - 56 mg/kg from 0-0.5 ft bgs. This location is southeast of previously closed PB 662. The presence of B(a)P in surface soil at this location is horizontally and vertically delineated to the applicable MSC.

The nature and extent of B(a)P in soil near PB 663, PB 666, PB 668 or PB 672 has been adequately characterized to support a reliable determination as to whether the selected standard is attained or whether remedial action is warranted. Because the horizontal and vertical extent of soil concentrations greater than the soil concentrations are delineated, and estimated depth to groundwater in this area is shows that the soil buffer distance for B(a)P has been achieved, concentrations of B(a)P in soil meet the SHS. Based upon these results, B(a)P soil concentrations in Tank Group 01 attain the SHS.

6.3.4 Naphthalene

As shown on **Table 3**, naphthalene was not detected in surface soil in the area at concentrations greater than applicable MSCs. The concentrations in surface soil ranged from 0.12 to 6.1 mg/kg. Naphthalene was detected in subsurface soil at concentrations greater than the Non-Res Soil DC MSC for subsurface soil (77 mg/kg) and Non-Res UA S-GW MSC (25 mg/kg). The concentrations in subsurface soil ranged from non-detect to 160 mg/kg.

Only two locations exhibited naphthalene in subsurface soil at concentrations greater than the Non-Res Soil DC MSC for subsurface soil (77 mg/kg) and Non-Res UA S-GW MSC (25 mg/kg) – specifically, PB-666-12 (160 mg/kg, 2.5-3 ft bgs), and PB-668-06 (150 mg/kg, 2.5-3 ft bgs).

These boring locations are shown on **Figure 5**. **Figures 9a and 9b** provide an additional illustration of the spatial distribution of naphthalene in surface and subsurface soil, respectively, relative to the applicable MSCs. Tables with the soil analytical results are provided in **Appendix G**.

As shown on **Figure 9b**, the horizontal extent of naphthalene concentrations in subsurface soil above the Non-Res Soil DC MSC for subsurface soil (77 mg/kg) and Non-Res UA S-GW MSC (25 mg/kg) is delineated. Five borings (i.e., PB-666-07, PB-666-09, PB-666-13, PB-666-14, PB-666-28, and PB-666-11) horizontally delineated the extent of naphthalene in subsurface soil at PB-666-12 to the north, south, east, and west. Likewise, four borings (i.e., PB-666-10, PB-668-01, PB-668-05, PB-668-04, PB-668-07, PB-668-08, and PB-666-14) horizontally delineated the extent of naphthalene in subsurface soil at PB-668-06 to the north, south, east, and west.

The vertical extent of naphthalene concentrations in subsurface soil above these applicable MSCs is also delineated. During the Site Characterization, shallower (0-0.5 ft bgs) and deeper (6-6.5 ft bgs) samples were collected in the vicinity of PB-666-12. In the surface soil sample, naphthalene was detected at a concentration of 0.84 mg/kg. Naphthalene was also detected in the deeper sample at a concentration of 0.054 mg/kg. These concentrations are less than the applicable MSCs. Similar vertical characterization performed in the vicinity of PB-668-06, in which shallower (0-0.5 ft bgs) and deeper (6-6.5 ft bgs) samples were collected, resulted in the same conditions. The shallower soil sample exhibited a detected concentration of 0.15 mg/kg. The deeper soil sample exhibited a detected concentration of 0.24 mg/kg. Both concentrations are less than the applicable MSCs. With regards to soil to groundwater protection, these deeper samples demonstrate that naphthalene in subsurface soil near PB 666 and PB 668 have not impacted shallow groundwater in the area of Tank Group 01.

As shown on **Figure 9a**, naphthalene has been historically identified in surface soil at location 663 Area-2 AOI8 at a concentration greater than the Non-Res UA S-GW MSC (25 mg/kg) - 31 mg/kg from 0-0.5 ft bgs. This location is southeast of previously closed PB 662. The presence of naphthalene in surface soil at this location is horizontally and vertically delineated to applicable MSCs.

The nature and extent of naphthalene in soil near PB 663, PB 666, PB 668 or PB 672 has been adequately characterized to support a reliable determination as to whether the selected standard is attained or whether remedial action is warranted.

6.3.5 Lead

As shown on **Table 3**, lead was detected in surface soil in the area at concentrations greater than the Non-Res Soil DC MSC for surface soil (1,000 mg/kg) and Non-Res UA S-GW MSC (450 mg/kg). The concentrations in surface soil ranged from 22 to 8,700 mg/kg. Lead was also detected in subsurface soil at concentrations greater than the Non-Res UA S-GW MSC (450 mg/kg). The concentrations in subsurface soil ranged from 9.1 to 17,000 mg/kg.

Lead was detected in surface soil at five locations at concentrations greater than the Non-Res Soil DC MSC for surface soil (1,000 mg/kg), specifically:

- PB-663-11 (1,010 mg/kg, 1.5–2 ft bgs);
- PB-666-03 (8,660 mg/kg, 1–1.5 ft bgs);
- PB-666-04 (4,310 mg/kg, 1.5–2 ft bgs);
- PB-666-12R (2,460 mg/kg, 0–0.5 ft bgs); and
- PB-666-21R (3,340 mg/kg, 0–0.5 ft bgs).

It was also detected in surface soil at nine locations greater than the Non-Res UA S-GW MSC (450 mg/kg), specifically:

- PB-663-11 (1,010 mg/kg, 1.5–2 ft bgs);
- PB-666-03 (8,660 mg/kg, 1–1.5 ft bgs);
- PB-666-04 (4,310 mg/kg, 1.5–2 ft bgs);
- PB-666-12R (2,460 mg/kg, 0–0.5 ft bgs);
- PB-666-21R (3,340 mg/kg, 0–0.5 ft bgs);
- PB-663-15 (785 mg/kg, 0–0.5 ft bgs);
- PB-663-16 (621 mg/kg, 0–0.5 ft bgs);
- PB-663-17 (508 mg/kg, 0–0.5 ft bgs); and
- PB-668-03 (483 mg/kg, 1.5–2 ft bgs).

In subsurface soil, lead was detected at 19 locations at concentrations greater than the Non-Res UA S-GW MSC (450 mg/kg). specifically:

- PB-663-01 (1,470 mg/kg, 3–3.5 ft bgs);
- PB-663-02 (7,180 mg/kg, 3–3.5 ft bgs);
- PB-663-03 (3,380 mg/kg, 2–2.5 ft bgs);
- PB-663-04 (461 mg/kg, 3–3.5 ft bgs);
- PB-663-07 (1,420 mg/kg, 3–3.5 ft bgs);
- PB-663-09 (2,010 mg/kg, 3–3.5 ft bgs);
- PB-663-10 (3,420 mg/kg, 3–3.5 ft bgs);
- PB-663-12 (2,430 mg/kg, 3–3.5 ft bgs);
- PB-663-15 (8,340 and 1,060 mg/kg, 3–3.5 and 6–6.5 ft bgs, respectively);
- PB-666-01 (653 mg/kg, 3.5–4 ft bgs);
- PB-666-02 (910 mg/kg, 2–2.5 ft bgs);
- PB-666-06 (2,200 mg/kg, 3.5–4 ft bgs);
- PB-666-12 (6,170 mg/kg, 2.5–3 ft bgs);
- PB-666-15 (784 mg/kg, 3.5–4 ft bgs);
- PB-666-16 (3-3.5 5200 mg/kg, 3–3.5 ft bgs);
- PB-666-17 (456 mg/kg, 3.5–4 ft bgs);
- PB-666-21 (14,450 and 8,990 mg/kg, 4.5–5 and 6–6.5 ft bgs, respectively); and
- PB-668-02 (1,600 mg/kg, 3–3.5 ft bgs).

These boring locations are shown on **Figure 5**. **Figures 10a and 10b** provide an additional illustration of the spatial distribution of lead in surface and subsurface soil, respectively, relative to the applicable MSCs. Tables with the soil analytical results are provided in **Appendix G**.

As discussed in Section 2.6.1, the presence of lead concentrations in surface and subsurface soil above applicable MSCs was a known pre-existing condition in this area – especially in the area of PB 663 and PB 666. As shown on **Figures 10a and 10b** which include historical soil sampling results, elevated concentrations have been identified in the southwestern portion of the Tank Group 01 and the levels are fairly ubiquitous. As discussed in Section 2.6, PADEP (2018) previously recognized that much of the area is covered by anthropogenic fill and that vertical/horizontal delineation of lead to MSCs may be difficult. As shown on Figure 2-7 of the AOI-8 RIR, this includes the area of Tank Group 01. Also, the AOI-8 RIR identified evidence of a historical landfill in the northern portion of AOI-8, south of the current Propane Loading Rack, and where these elevated lead concentrations in soil have been found. As noted, the area may have been used for the disposal of smelter slag. Finally, as noted by Stantec (2013), the area has historically been used for heavy fuel storage, not gasoline, further supporting a conclusion that the presence of lead is unrelated to the ASTs.

Despite the known presence of historical lead impacts in soil in this area and the lack of potential lead-containing product storage, PESRM attempted to delineate the horizontal and vertical extent of lead in soil at concentrations above the applicable MSCs in the Tank Group 01 area. This included the installation of borings at the perimeter of Tank Group 01 and adjacent to the containment berm. Delineation beyond the extent of the containment berm is not warranted since any releases to soil from the ASTs would have been contained by these berms.

As shown on **Figure 10a**, the horizontal extent of lead in surface soil at concentrations greater than the Non-Res Soil DC MSC for surface soil (1,000 mg/kg) has been delineated to the north (by borings PB-663-16 and PB-663-17), to the northeast (by boring PB-672-22), to the southeast (by boring PB-668-03), to the south (by boring PB-666-28), and to the west (by borings PB-666-26 and PB-663-15). The horizontal extent of lead in surface soil at concentrations greater than the Non-Res UA S-GW MSC (450 mg/kg) has been delineated to the north (by the containment berm), to the northeast (by boring PB-672-22), to the southeast (by the containment berm), to the south (by boring PB-666-28), and to the west (by boring PB-666-26 and the containment berm).

As shown on **Figure 10b**, the horizontal extent of lead in subsurface soil at concentrations greater than the Non-Res UA S-GW MSC (450 mg/kg) has been delineated to the north (by borings PB-663-16, PB-663-05, PB-663-06, PB-666-22, and PB-666-25), to the east (by boring PB-666-25 and the containment berm), to the south (by boring PB-666-28), and to the west (by boring PB-666-26 and the containment berm).

The vertical extent of lead concentrations in subsurface soil above the Non-Res UA S-GW MSC (450 mg/kg) is also delineated. During the Site Characterization, deeper samples were collected from soil borings which exhibited the highest lead concentrations in the area. These deeper soil samples exhibited lead concentrations that were not greater than the Non-Res UA S-GW MSC (450 mg/kg). This includes:

- PB-663-15 (50.6 mg/kg, 14.5–15 ft bgs);
- PB-663-16 (87.1 mg/kg, 6–6.5 ft bgs);

- PB-663-17 (156 mg/kg, 6–6.5 ft bgs);
- PB-666-12R (307 mg/kg, 6–6.5 ft bgs);
- PB-666-21R (19.3 mg/kg, 14.5–15 ft bgs);
- PB-666-26 (21.9 mg/kg, 6–6.5 ft bgs); and
- PB-666-28 (34.7 mg/kg, 6–6.5 ft bgs).

These deeper samples demonstrate that lead in subsurface soil in Tank Group 01 have not impacted shallow groundwater.

As a result, the nature of extent of lead concentrations in soil has been adequately delineated to the extent practicable. There is no evidence to indicate that elevated lead concentrations in soil above appliable MSCs are associated with releases to the environment from PB 663, PB 666, PB 668, and PB 672, and an additional Site Characterization is not needed to confirm the source or extent of lead contamination in soil.

6.4 Quality Assurance and Quality Control

During the Site Characterization field activities, a trip blank sample was submitted to the analytical laboratory to evaluate potential cross-contamination during sample container shipment and storage. Results of the quality assurance and quality control sample analyses are provided in **Appendix G**. None of the targeted constituents were detected at concentrations greater than the laboratory reporting limits. As such, there is no concern associated with laboratory cross-contamination and/or sampling-related cross-contamination related to the samples collected from the Site.

7 Ecological Screening Evaluation

The following describes the ecological screening evaluation that was performed for the Site. This evaluation was conducted in accordance with 25 PA Code §250.311, as specified in 25 PA Code §245.310 (28). The regulatory framework for conducting an ecological screening evaluation under the SHS is outlined in Section II.B.2(e) and summarized in the Ecological Screening Flow Chart provided in Figure II-16 of the PADEP (2019) Technical Guidance Manual (TGM). The key elements of the screening procedure are comprised of nine steps.

The initial screening phase of the process consists of Steps 1 and 2, as follows:

- **Step 1: Presence of Light Petroleum Product Constituents.** This step determines whether the COC in surface soil are related only to light petroleum products (i.e., gasoline, jet fuel A, kerosene, #2 fuel oil/diesel fuel) which have relatively low polycyclic aromatic hydrocarbon content (ASTM International E1739-95, *Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites*). If light petroleum product constituents (including benzene, toluene, ethylbenzene, and xylenes) are the only constituents detected, then the screening process moves to Step 9 (Final Report: No Further Ecological Evaluation Required). Due to the presence of constituents other than light petroleum products, the screening process continues to Step 2, below.
- **Step 2: Site Size.** This step determines the area of exposed and contaminated surface soil that are of potential ecological concern. The minimum areas are 2 acres of exposed and contaminated surface soil or 1,000 square feet of contaminated sediment. If the area of the site is smaller than the specified minimum areas, then the screening process moves to Step 9 (Final Report: No Further Ecological Evaluation Required).

Because no sediment is present at the Site and because the area of exposed contaminated soil (even when considering the presence of lead) encompasses approximately 1.9 acres (less than the minimum), no further ecological evaluation is required.

As indicated on Figure II-16 of the TGM, after completion of the initial screen (Steps 1 and 2), the remediator may be able to determine that no further ecological screening is required.

8 Conclusion

Terraphase has prepared this Report, on behalf of PESRM, to detail the results of the Site Assessment and Site Characterization activities and to provide the supporting information demonstrating adequate horizontal and vertical delineation of soil concentrations greater than applicable MSCs at Tank Group 01.

The Site Assessment and Site Characterization activities described in this Report were performed in accordance with the applicable provisions of Act 32, 25 PA Code Chapter 245 (Subchapter D), and Terraphase's (2021) Work Plan. The specific ASTs addressed in this Report include PB 663 (PADEP #074A), PB 666 (PADEP #043A), PB 668 (PADEP #008A), and PB 672 (PADEP #044A).

Based upon the results of soil samples collected during the Site Assessment and a comparison MSCs, no evidence of a release from PB 672 was identified. The Site Assessment outcome for PB 672 is "No Obvious Contamination – Sample Results Meet Action Levels."

Based upon the results of soil samples collected during the Site Assessment and a comparison to generic MSC, potential releases of regulated substances to the environment from PB 663, PB 666 and PB 668 were identified. The Site Assessment outcome category for these ASTs is "No Obvious Contamination – Sample Results Do Not Meet Action Levels." A Notification of Release was issued to PADEP on June 23, 2021 (Incident #No. 56446), indicating that unknown amounts of petroleum-related substances were potentially released to the environment from Tank Group 01 from these specific ASTs.

Site Characterization soil sampling was subsequently performed in Tank Group 01 resulting in adequate delineation of the horizontal and vertical extent of COC concentrations greater than applicable MSCs. Concentrations of all COCs can be demonstrated to have attained SHS with the exception of lead in surface soil and benzene, toluene, naphthalene, and lead in subsurface soil. There is no evidence to indicate that elevated lead concentrations in soil, above appliable MSCs, are associated with releases to the environment from PB 663, PB 666, PB 668, and PB 672. Elevated lead concentrations in the southwestern portion of Tank Group 01 are likely associated with historical sources (e.g., lead smelter slag fill).

Additional assessment will be performed in a forthcoming RAP to determine whether attainment of the SHS has been achieved or whether remedial action to address the elevated concentrations of benzene, toluene, and naphthalene in subsurface soil is warranted. The demonstration of attainment for all other COCs associated with the closure of Tank Group 01 will be presented in a forthcoming Remedial Action Completion Report.

9 References

Langan. 2015. *Human Health Risk Assessment Report*, Philadelphia Energy Solutions Refining & Marketing, LLC, Philadelphia Refinery, Philadelphia Pennsylvania and Sunoco Partners Marketing & Terminals, LP, Belmont Terminal, Philadelphia, Pennsylvania, and Marcus Hook Industrial Complex, Marcus Hook, Pennsylvania.

Pennsylvania Department of Environmental Protection (PADEP). 2014. *Storage Tank Program, 310(b) Site Characterization Report Approval. Nonresidential Statewide Health Standard*. Facility ID No. 51-33620. Point Breeze Processing Area Tank 666. Incident No. 45079. January 14.

PADEP. 2017a. *Site Characterization Report Approval, Storage Tank System Release May 20, 2011, Incident No. 46786, Tank 663*. September 21.

PADEP. 2017b. *Closure Requirements for Aboveground Storage Tank Systems*.

PADEP. 2018. *ECB Land Recycling Program, Act 2 Technical Memo Summary, Sunoco Philadelphia Refinery AOI-8, Remedial Investigation Report.* Memo from Richard Staron. March 22.

PADEP. 2019. *Land Recycling Program Technical Guidance Manual.* January.

Stantec. 2013. *Site Characterization Report/Remedial Action Completion Report for PB 666 Tank Release.* October 15.

Stantec. 2017. *Remedial Investigation Report, Area of Interest 8.* December 21.

Terraphase Engineering Inc. (Terraphase). 2021. *Aboveground Storage Tank Closure Work Plan.* March.

Tables

Table 1

Aboveground Storage Tank Details

Philadelphia Energy Systems Refinery and Marketing, Philadelphia, PA

Facility	State Regulation Number	Tank Number	Design Capacity (gal)	Primary Product	Regulatory Status	Facility ID	Status Modification Date	Tank Type	Double Bottom	Diameter (ft)	Height (ft)	Remaining Liquid (gal)	GPS Survey Complete	Demo Complete	Storage Tanks Reg./Permit App Form Submitted	Release Notification	Incident No.
Point Breeze	008A	PB 668	449,400	Light Cycle Oil	R	51-33620	1/20/2021	Cone Roof	N	40	48		N**	Y	1/21/2021	6/23/2021	56446
Point Breeze	043A	PB 666	2,818,200	Heavy Gas Oil	R	51-33620	1/19/2021	Cone Roof	Y, Removed	100	48		N**	Y	1/20/2021	6/23/2021	56446
Point Breeze	044A	PB 672	2,818,200	Vacuum Gas Oil	R	51-33620	1/27/2021	Cone Roof	N	100	48		N**	Y	1/27/2021		
Point Breeze	074A	PB 663	2,935,800	Heavy Gas Oil	R	51-33620	3/25/2021	Cone Roof	N	102	48		N**	Y	4/20/2021	6/23/2021	56446

Notes:

** - AST and piping were demolished and removed prior to JD2 recording key infrastructure features via GPS. Site assessment sampling points were identified using high resolution aerial photograph of the area with input from JD2.

Abbreviations:

R - Removed

Table 2
Evergreen Comprehensive List, Constituents of Concern (COC)
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

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

Table 3
Soil Screening Summary
Tank Group 01 (Historical)
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

									PADEP MSCs					
Matrix	**Chem Group**	**Chemical**	**CASRN**	**Analyzed**	**Detected**	**Min Detected** (mg/kg)	**Mean Detected** (mg/kg)	**Max Detected** (mg/kg)	**Non-Res Direct Contact MSC for Surface Soil (0-2 ft)** (mg/kg)	**Ratio of Max Detect to Non-Res Direct Contact MSC for Surface Soil**	**Non-Res Direct Contact MSC for Subsurface Soil (2-15 ft)** (mg/kg)	**Ratio of Max Detect to Non-Res Direct Contact MSC for Subsurface Soil**	**Non-Res Used Aquifer (TDS ≤ 2500) Soil-to-GW MSC** (mg/kg)	**Ratio of Max Detect to Non-Res Used Aquifer (TDS ≤ 2500) Soil-to-GW MSC**
Soil - Surface	VOC	Benzene	71-43-2	22	7	0.00050	0.020	0.12	280	0.00041			0.50	0.23
Soil - Surface	VOC	Cumene	98-82-8	18	1	0.021	0.021	0.021	10000	0.0000021			2500	0.0000084
Soil - Surface	VOC	Cyclohexane	110-82-7	9	1	0.68	0.68	0.68	10000	0.000068			6900	0.000099
Soil - Surface	VOC	Ethyl Benzene	100-41-4	18	3	0.0060	0.10	0.26	880	0.00030			70	0.0037
Soil - Surface	VOC	n-Hexane	110-54-3	9	1	0.00089	0.00089	0.00089	10000	0.000000089			5300	**1.7**
Soil - Surface	VOC	Toluene	108-88-3	18	6	0.0030	0.20	0.99	10000	0.000099			100	0.010
Soil - Surface	VOC	1,2,4-Trimethylbenzene	95-63-6	17	4	0.0040	0.62	2.2	4700	0.00047			300	0.0073
Soil - Surface	VOC	1,3,5-Trimethylbenzene	108-67-8	17	3	0.0020	0.36	0.95	4700	0.00020			93	0.010
Soil - Surface	VOC	Xylenes (total)	1330-20-7	18	4	0.0030	0.49	1.8	7900	0.00023			1000	0.0018
Soil - Surface	SVOC	Anthracene	120-12-7	22	14	0.040	7.1	38	190000	0.00020			350	0.11
Soil - Surface	SVOC	Benzo(a)anthracene	56-55-3	22	18	0.17	13	67	130	0.52			340	0.20
Soil - Surface	SVOC	Benzo(a)pyrene	50-32-8	26	23	0.12	8.6	56	91	0.62			46	**1.2**
Soil - Surface	SVOC	Benzo(b)fluoranthene	205-99-2	22	19	0.25	13	80	76	**1.1**			170	0.47
Soil - Surface	SVOC	Benzo(g,h,i)perylene	191-24-2	22	16	0.14	6.6	40	190000	0.00021			180	0.22
Soil - Surface	SVOC	Benzo(k)fluoranthene	207-08-9	9	5	0.087	4.3	20	76	0.26			610	0.033
Soil - Surface	SVOC	Chrysene	218-01-9	22	19	0.20	14	52	760	0.068			230	0.23
Soil - Surface	SVOC	Dibenz(a,h)anthracene	53-70-3	9	3	0.048	0.071	0.095	22	0.0043			270	0.00035
Soil - Surface	SVOC	Fluoranthene	206-44-0	9	5	0.29	21	98	130000	0.00075			3200	0.031
Soil - Surface	SVOC	Fluorene	86-73-7	22	12	0.0090	6.2	29	130000	0.00022			3800	0.0076
Soil - Surface	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	9	3	0.13	0.23	0.30	76	0.0039			18000	0.000016
Soil - Surface	SVOC	2-Methylnaphthalene	91-57-6	9	1	1.6	1.6	1.6	240	0.0065			100	0.016
Soil - Surface	SVOC	Naphthalene	91-20-3	22	6	0.0040	8.0	31	66	0.47			25	**1.2**
Soil - Surface	SVOC	Phenanthrene	85-01-8	22	18	0.13	25	150	190000	0.00079			10000	0.015
Soil - Surface	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	9	1	0.13	0.13	0.13	6500	0.000020			130	0.0010
Soil - Surface	SVOC	Di-n-butylphthalate	84-74-2	9	1	0.040	0.040	0.040	10000	0.0000040			4000	0.000010
Soil - Surface	SVOC	Pyrene	129-00-0	22	17	0.26	22	110	96000	0.0011			2200	0.050
Soil - Surface	INORG	Arsenic	7440-38-2	2	1	2.3	2.3	2.3	61	0.038			29	0.079
Soil - Surface	INORG	Cobalt	7440-48-4	9	7	4.2	10	20	960	0.021			130	0.16
Soil - Surface	INORG	Lead	7439-92-1	21	21	26	5500	95000	1000	**95**			450	**210**
Soil - Surface	INORG	Nickel	7440-02-0	9	8	14	49	210	64000	0.0033			650	0.32
Soil - Surface	INORG	Vanadium	7440-62-2	9	9	24	41	64	220	0.29			680	0.094
Soil - Surface	INORG	Zinc	7440-66-6	9	9	54	1300	4500	190000	0.024			12000	0.38
Soil - Subsurface	VOC	Benzene	71-43-2	9	2	0.94	11	20			330	0.062	0.50	**41**
Soil - Subsurface	VOC	Cumene	98-82-8	9	4	0.56	9.3	20			10000	0.0020	2500	0.0080
Soil - Subsurface	VOC	Cyclohexane	110-82-7	9	4	0.62	15	34			10000	0.0034	6900	0.0049
Soil - Subsurface	VOC	Ethyl Benzene	100-41-4	9	2	0.85	1.6	2.3			1000	0.0023	70	0.033
Soil - Subsurface	VOC	n-Hexane	110-54-3	9	2	8.9	33	56			10000	0.0056	5300	0.011
Soil - Subsurface	VOC	Toluene	108-88-3	9	2	0.85	3.8	6.7			10000	0.00067	100	0.067
Soil - Subsurface	VOC	1,2,4-Trimethylbenzene	95-63-6	9	6	0.0015	2.9	11			5400	0.0021	300	0.038
Soil - Subsurface	VOC	1,3,5-Trimethylbenzene	108-67-8	9	4	0.0019	1.3	2.7			5400	0.00050	93	0.029
Soil - Subsurface	VOC	Xylenes (total)	1330-20-7	9	3	1.9	5.2	8.9			9100	0.00097	1000	0.0089
Soil - Subsurface	SVOC	Acenaphthene	83-32-9	9	4	0.29	4.3	8.4			190000	0.000044	4700	0.0018
Soil - Subsurface	SVOC	Anthracene	120-12-7	9	6	0.055	5.3	16			190000	0.000082	350	0.044
Soil - Subsurface	SVOC	Benzo(a)anthracene	56-55-3	9	7	0.12	8.9	32			190000	0.00017	340	0.093
Soil - Subsurface	SVOC	Benzo(a)pyrene	50-32-8	9	8	0.11	6.6	24			190000	0.00013	46	0.52
Soil - Subsurface	SVOC	Benzo(b)fluoranthene	205-99-2	9	8	0.15	8.7	32			190000	0.00017	170	0.19
Soil - Subsurface	SVOC	Benzo(g,h,i)perylene	191-24-2	9	6	0.047	1.3	4.9			190000	0.000026	180	0.027
Soil - Subsurface	SVOC	Benzo(k)fluoranthene	207-08-9	9	6	0.045	2.1	12			190000	0.000061	610	0.019
Soil - Subsurface	SVOC	1,1-Biphenyl	92-52-4	9	1	1.5	1.5	1.5			40	0.039	1.5	1.0
Soil - Subsurface	SVOC	Chrysene	218-01-9	9	8	0.10	8.5	28			190000	0.00014	230	0.12
Soil - Subsurface	SVOC	Dibenz(a,h)anthracene	53-70-3	9	4	0.090	0.77	2.0			190000	0.000011	270	0.0074
Soil - Subsurface	SVOC	Fluoranthene	206-44-0	9	8	0.17	18	70			190000	0.00037	3200	0.022
Soil - Subsurface	SVOC	Fluorene	86-73-7	9	5	0.31	6.7	19			190000	0.000098	3800	0.0049
Soil - Subsurface	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	9	6	0.045	1.3	6.0			190000	0.000031	18000	0.00033
Soil - Subsurface	SVOC	2-Methylnaphthalene	91-57-6	9	3	0.27	83	150			270	0.54	100	**1.5**
Soil - Subsurface	SVOC	Naphthalene	91-20-3	9	2	7.1	8.7	10			77	0.14	25	0.42
Soil - Subsurface	SVOC	Phenanthrene	85-01-8	9	7	0.24	25	56			190000	0.00030	10000	0.0056
Soil - Subsurface	SVOC	Pyrene	129-00-0	9	8	0.13	17	56			190000	0.00029	2200	0.025
Soil - Subsurface	INORG	Cobalt	7440-48-4	9	9	2.1	9.4	22			190000	0.00011	130	0.17
Soil - Subsurface	INORG	Lead	7439-92-1	9	9	32	370	1700			190000	0.0087	450	**3.7**
Soil - Subsurface	INORG	Nickel	7440-02-0	9	9	7.9	25	49			190000	0.00026	650	0.076
Soil - Subsurface	INORG	Vanadium	7440-62-2	9	9	6.5	34	57			190000	0.00030	680	0.084
Soil - Subsurface	INORG	Zinc	7440-66-6	9	9	63	1600	12000			190000	0.064	12000	1.0

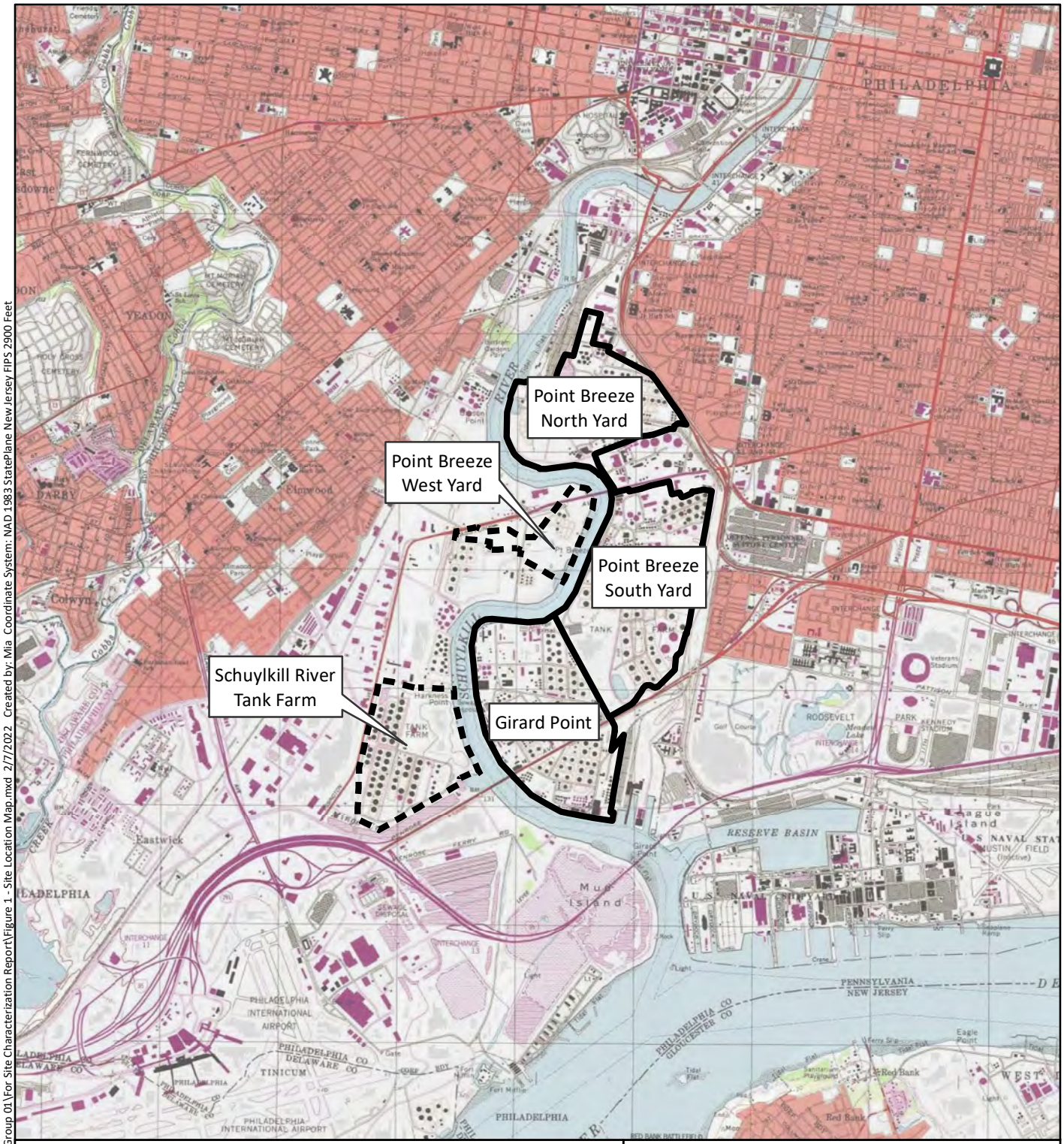
Notes:
Only constituents detected are shown.
The MSCs for Benzo(g,h,i)perylene are the values provided by the agency for Pyrene.
The MSCs for Phenanthrene are the values provided by the agency for Pyrene.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the MSCs for Xylenes (total).
Ratios of concentration to the MSCs greater than 1 are shaded in bold.
Chem Group - chemical group

Table 4
Soil Screening Summary
Tank Group 01 (Site Assessment, Site Characterization)
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

									PADEP MSCs					
Matrix	Chem Group	Chemical	CASRN	Analyzed	Detected	Min Detected (mg/kg)	Mean Detected (mg/kg)	Max Detected (mg/kg)	Non-Res Direct Contact MSC for Surface Soil (0-2 ft) (mg/kg)	Ratio of Max Detect to Non-Res Direct Contact MSC for Surface Soil	Non-Res Direct Contact MSC for Subsurface Soil (2-15 ft) (mg/kg)	Ratio of Max Detect to Non-Res Direct Contact MSC for Subsurface Soil	Non-Res Used Aquifer (TDS ≤ 2500) Soil-to-GW MSC (mg/kg)	Ratio of Max Detect to Non-Res Used Aquifer (TDS ≤ 2500) Soil-to-GW MSC
Soil - Surface	VOC	Benzene	71-43-2	10	5	0.00045	0.0091	0.028	280	0.00010			0.50	0.056
Soil - Surface	VOC	Cumene	98-82-8	6	4	0.00042	0.0070	0.024	10000	0.0000024			2500	0.0000096
Soil - Surface	VOC	Ethyl Benzene	100-41-4	6	4	0.00084	0.018	0.052	880	0.000059			70	0.00074
Soil - Surface	VOC	Toluene	108-88-3	7	4	0.0043	0.035	0.071	10000	0.0000071			100	0.00071
Soil - Surface	VOC	1,2,4-Trimethylbenzene	95-63-6	6	5	0.00080	0.27	1.3	4700	0.00028			300	0.0043
Soil - Surface	VOC	1,3,5-Trimethylbenzene	108-67-8	6	5	0.0010	0.13	0.61	4700	0.00013			93	0.0066
Soil - Surface	VOC	Xylenes (total)	1330-20-7	6	5	0.0017	0.11	0.45	7900	0.000057			1000	0.00045
Soil - Surface	SVOC	Anthracene	120-12-7	6	5	0.23	7.0	28	190000	0.00015			350	0.080
Soil - Surface	SVOC	Benzo(a)anthracene	56-55-3	6	6	0.17	12	57	130	0.44			340	0.17
Soil - Surface	SVOC	Benzo(a)pyrene	50-32-8	13	12	0.13	11	46	91	0.51			46	1.0
Soil - Surface	SVOC	Benzo(b)fluoranthene	205-99-2	13	12	0.14	15	57	76	0.75			170	0.34
Soil - Surface	SVOC	Benzo(g,h,i)perylene	191-24-2	6	6	0.090	7.7	25	190000	0.00013			180	0.14
Soil - Surface	SVOC	Chrysene	218-01-9	6	6	0.12	10	46	760	0.061			230	0.20
Soil - Surface	SVOC	Fluorene	86-73-7	6	6	0.020	2.4	11	130000	0.000085			3800	0.0029
Soil - Surface	SVOC	Naphthalene	91-20-3	10	10	0.12	0.96	6.1	66	0.092			25	0.24
Soil - Surface	SVOC	Phenanthrene	85-01-8	6	6	0.19	20	100	190000	0.00053			10000	0.010
Soil - Surface	SVOC	Pyrene	129-00-0	6	6	0.17	19	87	96000	0.00091			2200	0.040
Soil - Surface	INORG	Lead	7439-92-1	13	13	22	1700	8700	1000	**8.7**			450	**19**
Soil - Subsurface	VOC	Benzene	71-43-2	71	21	0.00037	0.51	5.8			330	0.018	0.50	**12**
Soil - Subsurface	VOC	Cumene	98-82-8	65	15	0.00020	0.72	7.1			10000	0.00071	2500	0.0028
Soil - Subsurface	VOC	Ethyl Benzene	100-41-4	65	15	0.00029	0.38	2.0			1000	0.0020	70	0.029
Soil - Subsurface	VOC	Toluene	108-88-3	66	18	0.0011	84	1500			10000	0.15	100	**15**
Soil - Subsurface	VOC	1,2,4-Trimethylbenzene	95-63-6	65	17	0.00089	4.2	38			5400	0.0070	300	0.13
Soil - Subsurface	VOC	1,3,5-Trimethylbenzene	108-67-8	65	17	0.00044	2.0	13			5400	0.0024	93	0.14
Soil - Subsurface	VOC	Xylenes (total)	1330-20-7	65	16	0.0017	3.2	24			9100	0.0026	1000	0.024
Soil - Subsurface	SVOC	Anthracene	120-12-7	65	53	0.00082	4.1	74			190000	0.00039	350	0.21
Soil - Subsurface	SVOC	Benzo(a)anthracene	56-55-3	65	62	0.0013	8.3	130			190000	0.00068	340	0.38
Soil - Subsurface	SVOC	Benzo(a)pyrene	50-32-8	76	66	0.0011	7.4	140			190000	0.00074	46	**3.0**
Soil - Subsurface	SVOC	Benzo(b)fluoranthene	205-99-2	76	70	0.0016	8.7	170			190000	0.00089	170	1.0
Soil - Subsurface	SVOC	Benzo(g,h,i)perylene	191-24-2	65	59	0.0017	4.8	84			190000	0.00044	180	0.47
Soil - Subsurface	SVOC	Chrysene	218-01-9	65	61	0.00087	7.4	110			190000	0.00058	230	0.48
Soil - Subsurface	SVOC	Fluorene	86-73-7	65	49	0.0010	2.4	53			190000	0.00028	3800	0.014
Soil - Subsurface	SVOC	Naphthalene	91-20-3	71	56	0.0017	6.0	160			77	**2.1**	25	**6.4**
Soil - Subsurface	SVOC	Phenanthrene	85-01-8	65	60	0.00084	14	320			190000	0.0017	10000	0.032
Soil - Subsurface	SVOC	Pyrene	129-00-0	65	61	0.0011	13	190			190000	0.0010	2200	0.086
Soil - Subsurface	INORG	Lead	7439-92-1	78	78	9.1	1100	17000			190000	0.088	450	**37**

Notes:
Only constituents detected are shown.
The MSCs for Benzo(g,h,i)perylene are the values provided by the agency for Pyrene.
The MSCs for Phenanthrene are the values provided by the agency for Pyrene.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the MSCs for Xylenes (total).
Ratios of concentration to the MSCs greater than 1 are shaded in bold.
Chem Group - chemical group

Figures



0 2,000 4,000 6,000 Feet

1 inch = 4,000 feet

N

Legend

Subject to AST Closure Plan

Not Subject to AST Closure Plan

Base Map: USGS Philadelphia 1994 7.5 Minute Quadrangle.

SAFETY FIRST

terraphase engineering

CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC

PROJECT: Aboveground Storage Tank Closure

PROJECT NUMBER: P044.001.002

Facility Location

Figure 1

File: N:\GIS\Prj\P044.001_PESRM-PES\MXDs\AST Work\Tank Group 01\For Site Characterization Report\Figure 1 - Site Location Map.mxd 2/7/2022 Created by: Mia Coordinate System: NAD 1983 StatePlane New Jersey FIPS 2900 Feet

Legend

Tank Group

- 01
- 02
- 03
- 04
- 05
- 06
- 07
- 08
- Previously Closed
- Subject to AST Closure Plan
- Not Subject to AST Closure Plan

Site

Point Breeze North Yard

Point Breeze South Yard

Point Breeze West Yard

Girard Point

Schuylkill River Tank Farm

N

0 500 1,000 1,500 Feet

1 inch = 1,000 feet

Notes: Aerial imagery source Maxar 10/19/2019

SAFETY FIRST

terraphase engineering

CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC

PROJECT: Aboveground Storage Tank Closure

PROJECT NUMBER: P044.001.002

Site Location

Figure 2

File: N:\GIS\Prj\P044.001_PESRM-PES\MXDs\AST Work\Tank Group 01\For Site Characterization Report\Figure 2 - Site Location.mxd 2/7/2022 Created by: Mia Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet

Notes:
Aerial imagery source Maxar 10/19/2019

0 50 100 150 200 Feet

1 inch = 100 feet

N

SAFETY FIRST

terraphase engineering

CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC

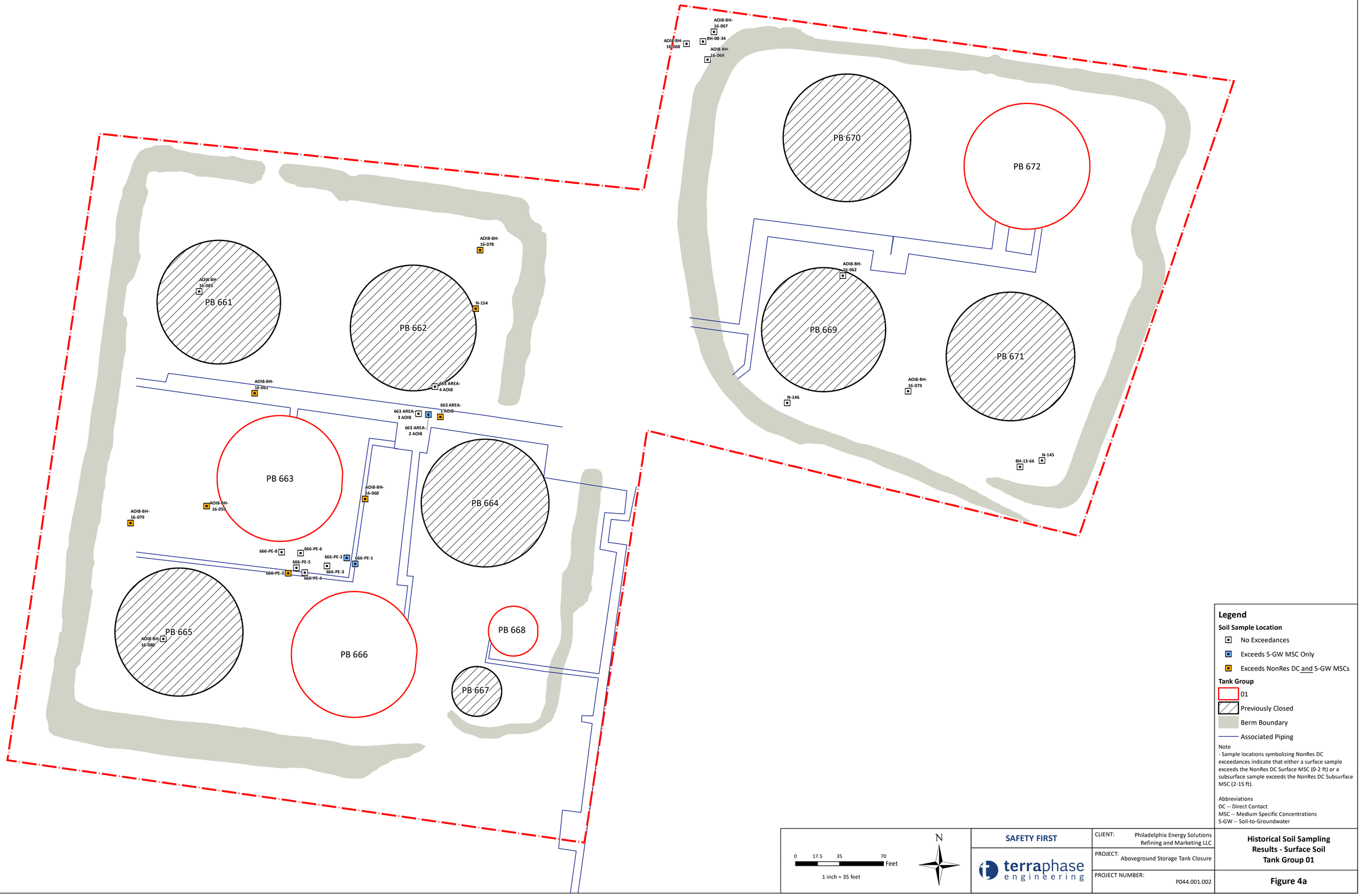
PROJECT: Aboveground Storage Tank Closure

PROJECT NUMBER: P044.001.002

Site Layout Tank Group 01

Figure 3

File: N:\GIS\Pr\P044.001_PESRM-PES\MXDs\AST Work\Tank Group 01\For Site Characterization Report\Figure 3 - Site Layout Map.mxd 2/7/2022 Created by: Mia Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet



Legend

Soil Sample Location

- No Exceedances
- Exceeds S-GW MSC Only
- Exceeds NonRes DC and S-GW MSCs

Tank Group

- 01
- Previously Closed
- Berm Boundary
- Associated Piping

Note
- Sample locations symbolizing NonRes DC exceedances indicate that either a surface sample exceeds the NonRes DC Surface MSC (0-2 ft) or a subsurface sample exceeds the NonRes DC Subsurface MSC (2-15 ft).

Abbreviations
DC -- Direct Contact
MSC -- Medium Specific Concentrations
S-GW -- Soil-to-Groundwater

0 17.5 35 70 Feet

1 inch = 35 feet

N

SAFETY FIRST

terraphase engineering

CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC

PROJECT: Aboveground Storage Tank Closure

PROJECT NUMBER: P044.001.002

Historical Soil Sampling Results - Surface Soil Tank Group 01

Figure 4a

File: K:\GIS\Prj\P044.001_PESRM-PESMXD\s\AST Work\Tank Group 01\Evergeen Spatial Distribution\\(20220203) - Figure 4a - Historical Soil Sampling Results - Surface Soil.mxd 2/14/2022 Created by: Mia Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet

PB 661

PB 662

N-154

AOI8-BH-16-061

PB 663

AOI8-BH-16-059

AOI8-BH-16-060

PB 664

PB 665

PB 666

PB 668

PB 667

PB 670

PB 672

AOI8-BH-16-062

PB 669

PB 671

AOI8-BH-16-073

N-146

N-145

BH-13-66

Legend

Soil Sample Location

- No Exceedances
- Exceeds S-GW MSC Only

Tank Group

- 01
- Previously Closed
- Berm Boundary
- Associated Piping

Abbreviations
MSC -- Medium Specific Concentrations
S-GW -- Soil-to-Groundwater

0 17.5 35 70 Feet

1 inch = 35 feet

N

SAFETY FIRST

terraphase engineering

CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC

PROJECT: Aboveground Storage Tank Closure

PROJECT NUMBER: P044.001.002

Historical Soil Sampling Results - Subsurface Soil Tank Group 01

Figure 4b

File: N:\GIS\Proj\P044.001_PESRM-PES\MXDs\AST Work\Tank Group 01\Evergreen Spatial Distribution\(20220203) - Figure 4b - Historical Soil Sampling Results - Subsurface Soil.mxd 2/14/2022 Created by: Mia Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet

AOI8-BH-16-082

AOI8-BH-16-067

AOI8-BH-16-068

BH-08-34

AOI8-BH-16-069

PB-672-01 PB-672-02 PB-672-03

PB-672-05

PB-672-04 PB-672-06 PB-672-07

PB-672-10

PB 670

PB 672

PB-672-19 PB-672-18 PB-672-17 PB-672-15 PB-672-14 PB-672-08 PB-672-09 PB-672-11

PB-672-16 PB-672-13 PB-672-12

PB-672-20

AOI8-BH-16-062

PB-672-22 PB-672-21 PB-672-23

PB 669

PB 671

AOI8-BH-16-073

N-146

N-145

BH-13-66

N-142

N-144

N-155

N-153

N-140

PB-663-16

PB-663-17

AOI8-BH-16-078

AOI8-BH-16-083

PB 661

PB 662

N-154

663 AREA-2 AOI8

663 AREA-3 AOI8

663 AREA-4 AOI8

663 AREA-1 AOI8

PB-663-15 PB-663-01 PB-663-02 AOI8-BH-16-061 PB-663-05 PB-663-03 PB-663-04 PB-663-06 PB-666-22 PB-666-23 PB-666-24

PB-663-07

PB-666-19 PB-666-20 PB-666-21R PB-666-20R PB-666-21 PB-666-25

PB-663-08 PB-663-09 PB-663-10 PB-666-17

PB 663

PB 664

AOI8-BH-16-059 PB-663-13 AOI8-BH-16-060

AOI8-BH-16-079 PB-666-18

PB-663-11 PB-663-12 PB-663-14 PB-666-16

PB-666-26 666-PE-6 666-PE-8 666-PE-2

PB-666-01 666-PE-5 666-PE-3 666-PE-1

AOI8-BH-17-SB-A PB-666-02 666-PE-4 PB-666-03 PB-666-15

666-PE-7 PB-666-04 PB-666-05

PB-668-01 PB-668-02

PB-668-05

PB 665 PB-666-08 PB-666-06

AOI8-BH-16-080 PB-668-03 PB 668 PB-668-04

PB-666-07 PB-666-09 PB-666-10

PB 666 PB-668-06 PB-668-06R PB-668-07

PB-666-13

PB 667

PB-666-27

PB-666-11 PB-666-12 PB-666-14 PB-668-08

PB-666-11R PB-666-12R

PB-666-29

PB-666-28

BH-08-35

Legend

Soil Sample Location

- Site Assessment
- Site Characterization
- Historical

Color Scheme for Identifying Exceedances

- None
- S-GW MSC Only
- NonRes DC and S-GW MSCs

Tank Group

- 01
- Previously Closed
- Berm Boundary
- Associated Piping

Note
- Sample locations symbolizing NonRes DC exceedances indicate that either a surface sample exceeds the NonRes DC Surface MSC (0-2 ft) or a subsurface sample exceeds the NonRes DC Subsurface MSC (2-15 ft).

Abbreviations
DC -- Direct Contact
MSC -- Medium Specific Concentrations
S-GW -- Soil-to-Groundwater

0 20 40 80 Feet

1 inch = 40 feet

N

SAFETY FIRST

terraphase engineering

CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC

PROJECT: Aboveground Storage Tank Closure

PROJECT NUMBER: P044.001.002

Soil Sampling Results Tank Group 01

Figure 5

File: N:\GIS\Prj\P044.001_PESRM-PES\MXD\AST Work\Tank Group 01\For Site Characterization Report\Figure 5 - Sampling Results.mxd 2/14/2022 Created by: Mia Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet

N-100

BH-08-33

BH-08-34

PB 670

PB 672

PB 661

PB 662

N-154

PB-672-22

AOI8-BH-16-062

PB 669

PB 671

AOI8-BH-16-061

663 AREA-4 AOI8

663 AREA-2 AOI8

663 AREA-1 AOI8

663 AREA-3 AOI8

AOI8-BH-16-073

N-146

N-155

BH-13-66

N-145

PB-666-20R

PB 663

AOI8-BH-16-060

PB 664

N-142

AOI8-BH-16-059

PB-663-14

PB-663-11

666-PE-8

666-PE-6

666-PE-2

666-PE-1

666-PE-5

666-PE-3

666-PE-7

666-PE-4

PB-666-03

N-144

PB-666-04

PB 665

PB 666

PB 668

PB-668-03

N-153

PB 667

BH-08-29

PB-666-27

PB-666-11R

PB-666-29

N-140

BH-08-35

Legend

PESRM Soil Sample Location

No Exceedances

Historical Soil Sample Location

No Exceedances

Tank Group

01

Previously Closed

Berm Boundary

Associated Piping

Note
- Sample location size symbolizes relative concentration.

0 22.5 45 90 Feet

1 inch = 45 feet

N

SAFETY FIRST

terraphase engineering

CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC

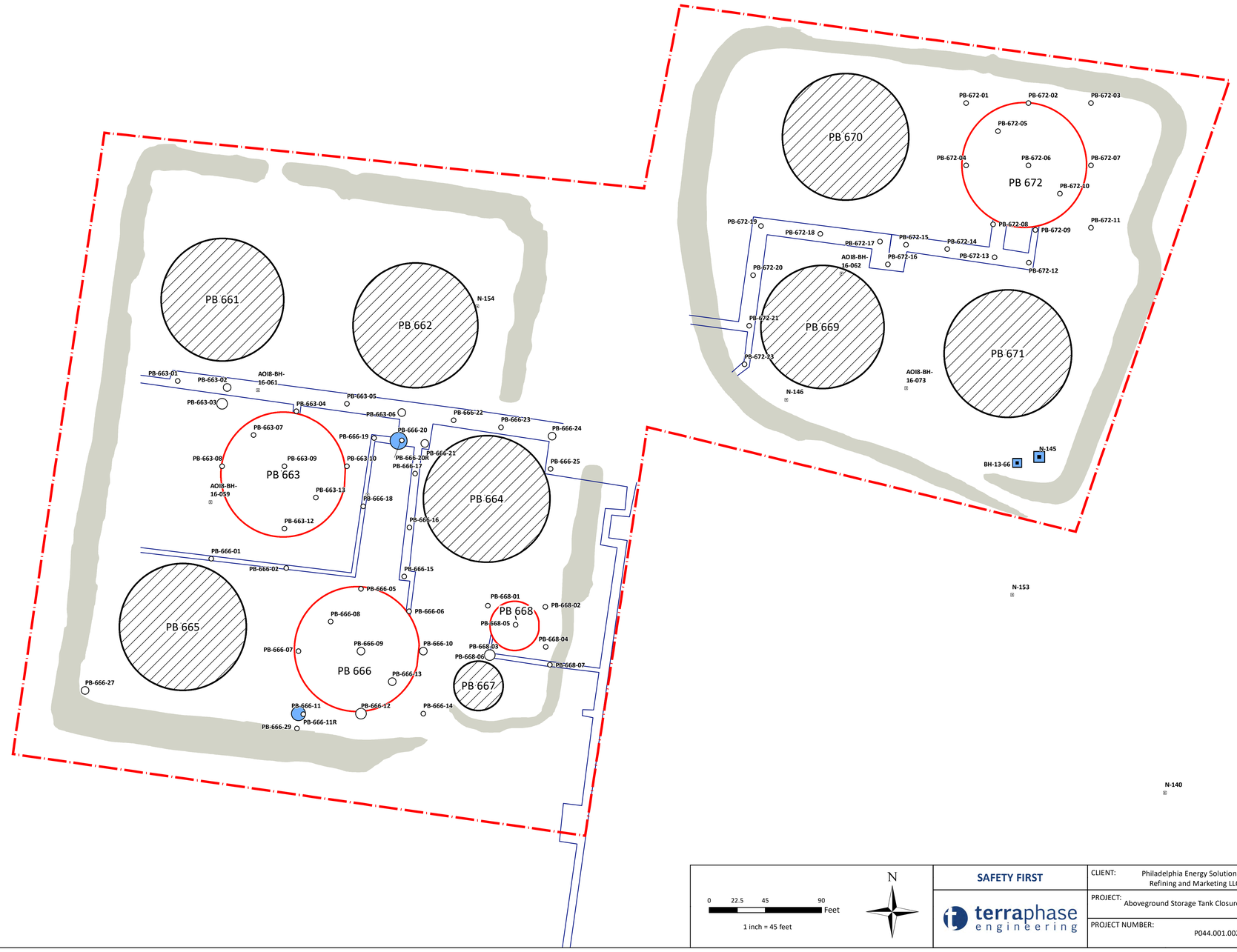
PROJECT: Aboveground Storage Tank Closure

PROJECT NUMBER: P044.001.002

Surface Soil Sampling Results Tank Group 01 (Benzene)

Figure 6a

File: N:\GIS\Prj\P044.001_PESRM-PESMXD\AST Work\Tank Group 01\Site Characterization\20220128_Site Characterization - MSC_DCandDiked_withEvergreen_MaxResultsByChem\\20220128) Tank Group 01- MSC_DCandDiked_withEvergreen_Benzene_Surf.mxd 2/14/2022 Created by: RKW Checked by: JNITAL Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet



Legend

PESRM Soil Sample Location

- No Exceedances
- Exceeds S-GW MSC Only

Historical Soil Sample Location

- No Exceedances
- Exceeds S-GW MSC Only

Tank Group

- 01
- Previously Closed
- Berm Boundary
- Associated Piping

Note
- Sample location size symbolizes relative concentration.

Abbreviations
MSC -- Medium Specific Concentrations
S-GW -- Soil-to-Groundwater

0 22.5 45 90 Feet

1 inch = 45 feet

N

SAFETY FIRST

terraphase engineering

CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC

PROJECT: Aboveground Storage Tank Closure

PROJECT NUMBER: P044.001.002

Subsurface Soil Sampling Results Tank Group 01 (Benzene)

Figure 6b

File: N:\GIS\Proj\P044.001_PESRM-PESVM50\AST Work\Tank Group 01\Site Characterization\20220128_Site Characterization - MSC_DCandUsed_withEvergreen_Benzene_Sub.mxd 2/14/2022 Created by: RKW Checked by: INITIAL Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet

N-100

BH-08-33

BH-08-34

PB 670

PB 672

PB 661

PB 662

N-154

AOI8-BH-16-062

PB-672-22

PB 669

PB 671

AOI8-BH-16-073

N-146

N-155

AOI8-BH-16-061

PB-666-20R

PB 663

AOI8-BH-16-059

AOI8-BH-16-060

PB 664

PB-663-11

PB-663-14

666-PE-8

666-PE-6

666-PE-2

666-PE-1

666-PE-5

666-PE-3

666-PE-7

666-PE-4

PB-666-03

PB-666-04

BH-13-66

N-145

N-142

N-144

PB 665

PB 666

PB-668-03

PB 668

PB 667

N-153

BH-08-29

N-140

BH-08-35

Legend

PESRM Soil Sample Location

No Exceedances

Historical Soil Sample Location

No Exceedances

Tank Group

01

Previously Closed

Berm Boundary

Associated Piping

Note
- Sample location size symbolizes relative concentration.

0 22.5 45 90 Feet

1 inch = 45 feet

N

SAFETY FIRST

terraphase engineering

CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC

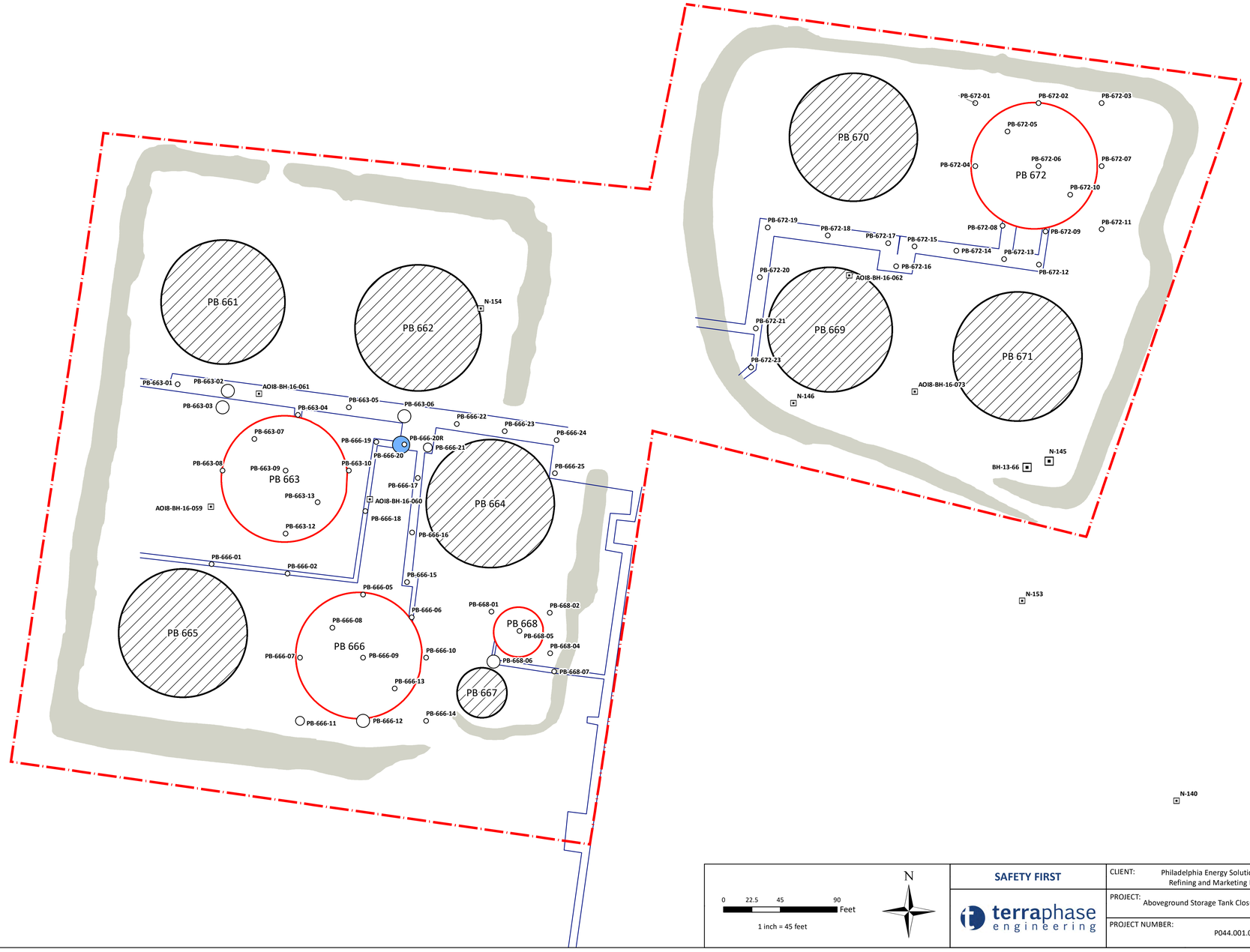
PROJECT: Aboveground Storage Tank Closure

PROJECT NUMBER: P044.001.002

Surface Soil Sampling Results
Tank Group 01
(Toluene)

Figure 7a

File: N:\GIS\Proj\P044.001_PESRM-PES\MXD\AST Work\Tank Group 01\Site Characterization\20220128_Site Characterization - MSC_DCandI\mxd_withEvergreen_Toluene_Surf.mxd 2/14/2022 Created by: RKW Checked by: INITIAL Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet



Legend

PESRM Soil Sample Location

- No Exceedances
- Exceeds S-GW MSC Only

Historical Soil Sample Location

- No Exceedances

Tank Group

- 01
- Previously Closed
- Berm Boundary
- Associated Piping

Note
- Sample location size symbolizes relative concentration.

Abbreviations
MSC -- Medium Specific Concentrations
S-GW -- Soil-to-Groundwater

0 22.5 45 90 Feet

1 inch = 45 feet

N

SAFETY FIRST

terraphase engineering

CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC

PROJECT: Aboveground Storage Tank Closure

PROJECT NUMBER: P044.001.002

Subsurface Soil Sampling Results Tank Group 01 (Toluene)

Figure 7b

File: N:\GIS\Proj\P044.001_PESRM-PES\MXDs\AST Work\Tank Group 01\Site Characterization\20220328_Site Characterization - MSC_DCandUsed_withEvergreen_Toluene_Sub.mxd 2/14/2022 Created by: RKW Checked by: INITIAL Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet

N-100

BH-08-33

AOI8-BH-16-067

AOI8-BH-16-068

BH-08-34

AOI8-BH-16-069

PB 670

PB 672

PB 661

AOI8-BH-16-083

PB 662

N-154

PB-672-22

AOI8-BH-16-062

PB 669

PB 671

663 AREA-4

AOI8

AOI8-BH-16-061

663 AREA-2

AOI8

AOI8-BH-16-073

N-146

663 AREA-3

AOI8

663 AREA-1

AOI8

N-155

BH-13-66

N-145

PB 663

AOI8-BH-16-060

PB 664

N-142

AOI8-BH-16-059

PB-663-11

PB-663-14

666-PE-8

666-PE-6

666-PE-2

666-PE-1

666-PE-5

666-PE-3

666-PE-7

666-PE-4

PB-666-03

N-144

PB-666-04

PB 665

PB 666

PB 668

PB-668-03

PB-668-06R

N-153

PB 667

PB-666-27

PB-666-11R

PB-666-12R

PB-668-08

PB-666-29

PB-666-28

N-140

BH-08-35

Legend

PESRM Soil Sample Location

No Exceedances

Historical Soil Sample Location

No Exceedances

Exceeds S-GW MSC Only

Tank Group

01

Previously Closed

Berm Boundary

Associated Piping

Note
- Sample location size symbolizes relative concentration.

Abbreviations
MSC -- Medium Specific Concentrations
S-GW -- Soil-to-Groundwater

0 22.5 45 90 Feet

1 inch = 45 feet

N

SAFETY FIRST

terraphase engineering

CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC

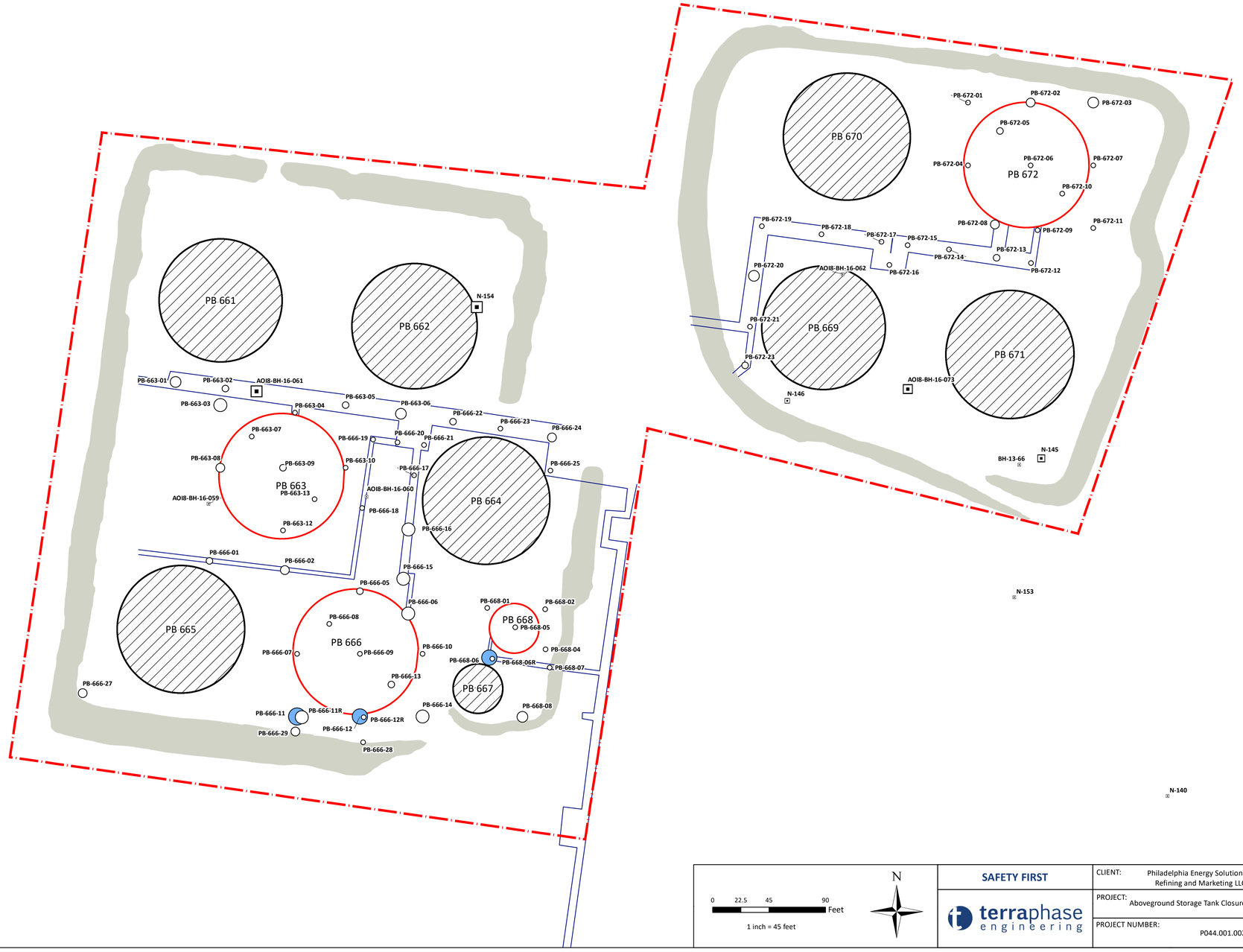
PROJECT: Aboveground Storage Tank Closure

PROJECT NUMBER: P044.001.002

Surface Soil Sampling Results Tank Group 01 (Benzo(a)pyrene)

Figure 8a

File: N:\GIS\Proj\P044.001_PESRM-PES\MXDs\AST Work\Tank Group 01\Site Characterization\20220328_Site Characterization - MSC_DCandIUsed_withEvergreen_BaP_Surf.mxd 2/14/2022 Created by: RKW Checked by: INITIAL Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet



Legend

PESRM Soil Sample Location

- No Exceedances
- Exceeds S-GW MSC Only

Historical Soil Sample Location

- No Exceedances

Tank Group

- 01
- Previously Closed
- Berm Boundary
- Associated Piping

Note
- Sample location size symbolizes relative concentration.

Abbreviations
MSC -- Medium Specific Concentrations
S-GW -- Soil-to-Groundwater

0 22.5 45 90 Feet

1 inch = 45 feet

N

SAFETY FIRST

terraphase engineering

CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC

PROJECT: Aboveground Storage Tank Closure

PROJECT NUMBER: P044.001.002

Subsurface Soil Sampling Results Tank Group 01 (Benzo(a)pyrene)

Figure 8b

File: N:\GIS\Proj\P044.001_PESRM-PES\MXDs\AST Work\Tank Group 01\Site Characterization\20220128_Site Characterization - MSC_DCandIsked_withEvergreen_BaP_Sub.mxd 2/14/2022 Created by: RKW Checked by: INITIAL Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet

N-100

BH-08-33

BH-08-34

PB 670

PB 672

PB 661

PB 662

N-154

663 AREA-4
AOI8

AOI8-BH-16-062

PB-672-22

PB 669

PB 671

AOI8-BH-16-073

AOI8-BH-16-061

663 AREA-1
AOI8

663 AREA-3
AOI8

663 AREA-2
AOI8

N-146

N-155

BH-13-66

N-145

PB 663

AOI8-BH-16-059

AOI8-BH-16-060

PB 664

N-142

PB-663-11

PB-663-14

666-PE-8

666-PE-6

666-PE-2

666-PE-5

666-PE-3

666-PE-1

666-PE-7

666-PE-4

PB-666-03

PB-666-04

N-144

PB 665

PB 666

PB 668

PB-668-03

PB-668-06R

PB 667

PB-668-08

N-153

PB-666-12R

PB-666-28

N-140

BH-08-35

Legend

PESRM Soil Sample Location

- No Exceedances

Historical Soil Sample Location

- No Exceedances
- Exceeds S-GW MSC Only

Tank Group

- 01
- Previously Closed
- Berm Boundary
- Associated Piping

Note
- Sample location size symbolizes relative concentration.

Abbreviations
MSC -- Medium Specific Concentrations
S-GW -- Soil-to-Groundwater

0 22.5 45 90 Feet

1 inch = 45 feet

N

SAFETY FIRST

terraphase engineering

CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC

PROJECT: Aboveground Storage Tank Closure

PROJECT NUMBER: P044.001.002

Surface Soil Sampling Results Tank Group 01 (Naphthalene)

Figure 9a

File: N:\GIS\Prj\P044.001_PESRM-PES\MXDs\AST Work\Tank Group 01\Site Characterization\20220328_Site Characterization - MSC_DCandUsed_withEvergreen_NaphthaleneSurf.mxd 2/14/2022 Created by: RKW Checked by: INITIAL Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet

Legend

PESRM Soil Sample Location

- No Exceedances
- Exceeds NonRes DC and S-GW MSCs

Historical Soil Sample Location

- No Exceedances

Tank Group

- 01
- Previously Closed
- Berm Boundary
- Associated Piping

Note
- Sample location size symbolizes relative concentration.
- Sample locations symbolizing NonRes DC exceedances indicate that either a surface sample exceeds the NonRes DC Surface MSC (0-2 ft) or a subsurface sample exceeds the NonRes DC Subsurface MSC (2-15 ft).

Abbreviations
DC -- Direct Contact
MSC -- Medium Specific Concentrations
S-GW -- Soil-to-Groundwater

0 22.5 45 90 Feet

1 inch = 45 feet

N

SAFETY FIRST

terraphase engineering

CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC

PROJECT: Aboveground Storage Tank Closure

PROJECT NUMBER: P044.001.002

Subsurface Soil Sampling Results Tank Group 01 (Naphthalene)

Figure 9b

File: N:\GIS\Proj\P044.001_PESRM-PES\MXDs\AST Work\Tank Group 01\Site Characterization\20220128_Site Characterization - MSC_DCandUsed_withEvergreen_MaxResultsByChem\(20220128) Tank Group 01- MSC_DCandUsed_

N-100

BH-08-33

AOI8-BH-16-082

BH-08-34

PB 670

PB 672

PB-663-16

PB-663-17

AOI8-BH-16-078

PB 661

PB 662

N-154

AOI8-BH-16-062

PB-672-22

PB 669

PB 671

PB-663-15

AOI8-BH-16-061

AOI8-BH-16-073

N-146

N-155

PB-666-21R

BH-13-66

N-145

PB 663

AOI8-BH-16-060

PB 664

AOI8-BH-16-059

AOI8-BH-16-079

PB-663-11

PB-663-14

N-142

PB-666-26

666-PE-8

666-PE-6

666-PE-2

666-PE-1

666-PE-3

666-PE-5

666-PE-7

666-PE-4

PB-666-03

PB-666-04

N-153

PB 665

AOI8-BH-16-080

PB 666

PB-668-03

PB 668

PB 667

PB-666-12R

PB-666-28

N-140

BH-08-35

Legend

PESRM Soil Sample Location

- No Exceedances
- Exceeds S-GW MSC Only
- Exceeds NonRes DC and S-GW MSCs

Historical Soil Sample Location

- No Exceedances
- Exceeds S-GW MSC Only
- Exceeds NonRes DC and S-GW MSCs

Tank Group

- 01
- Previously Closed
- Berm Boundary
- Associated Piping

Note
- Sample location size symbolizes relative concentration.
- Sample locations symbolizing NonRes DC exceedances indicate that either a surface sample exceeds the NonRes DC Surface MSC (0-2 ft) or a subsurface sample exceeds the NonRes DC Subsurface MSC (2-15 ft).

Abbreviations
DC -- Direct Contact
MSC -- Medium Specific Concentrations
S-GW -- Soil-to-Groundwater

0 22.5 45 90 Feet

1 inch = 45 feet

N

SAFETY FIRST

terraphase engineering

CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC

PROJECT: Aboveground Storage Tank Closure

PROJECT NUMBER: P044.001.002

Surface Soil Sampling Results Tank Group 01 (Lead)

Figure 10a

File: N:\GIS\Proj\P044.001_PESRM-PESMMDs\AST Work\Tank Group 01\Site Characterization\20220128_Site Characterization- MSC_DCandUsed_withEvergreen_Lead_Surf.mxd 2/14/2022 Created by: RKW Checked by: INITIAL Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet

PB 661
PB 662
PB 663
PB 664
PB 665
PB 666
PB 667
PB 668
PB 669
PB 670
PB 671
PB 672
PB-663-16
PB-663-17
PB-663-15
PB-663-01
PB-663-02
PB-663-03
PB-663-04
PB-663-05
PB-663-06
PB-663-07
PB-663-08
PB-663-09
PB-663-10
PB-663-12
PB-663-13
AOI8-BH-16-059
AOI8-BH-16-060
AOI8-BH-16-061
AOI8-BH-16-062
AOI8-BH-16-073
PB-666-01
PB-666-02
PB-666-05
PB-666-06
PB-666-07
PB-666-08
PB-666-09
PB-666-10
PB-666-11
PB-666-12
PB-666-12R
PB-666-13
PB-666-14
PB-666-15
PB-666-16
PB-666-17
PB-666-18
PB-666-19
PB-666-20
PB-666-21
PB-666-21R
PB-666-22
PB-666-23
PB-666-24
PB-666-25
PB-666-26
PB-666-28
PB-668-01
PB-668-02
PB-668-04
PB-668-05
PB-668-06
PB-668-07
PB-672-01
PB-672-02
PB-672-03
PB-672-04
PB-672-05
PB-672-06
PB-672-07
PB-672-08
PB-672-09
PB-672-10
PB-672-11
PB-672-12
PB-672-13
PB-672-14
PB-672-15
PB-672-16
PB-672-17
PB-672-18
PB-672-19
PB-672-20
PB-672-21
PB-672-23
N-140
N-142
N-144
N-145
N-146
N-153
N-154
N-155
BH-13-66

Legend

PESRM Soil Sample Location

- No Exceedances
- Exceeds S-GW MSC Only

Historical Soil Sample Location

- No Exceedances
- Exceeds S-GW MSC Only

Tank Group

- 01
- Previously Closed
- Berm Boundary
- Associated Piping

Note
- Sample location size symbolizes relative concentration.

Abbreviations
MSC -- Medium Specific Concentrations
S-GW -- Soil-to-Groundwater

0 22.5 45 90 Feet

1 inch = 45 feet

N

SAFETY FIRST

terraphase engineering

CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC

PROJECT: Aboveground Storage Tank Closure

PROJECT NUMBER: P044.001.002

Subsurface Soil Sampling Results Tank Group 01 (Lead)

Figure 10b

File: N:\GIS\Proj\P044.001_PESRM-PES\MXD\AST Work\Tank Group 01\Site Characterization\20220128_Site Characterization - MSC_DCandUsed_withEvergreen_MaxResultsByChem\20220128 Tank Group 01 - MSC_DCandUsed_withEvergreen_Lead_Sub.mxd 2/14/2022 Created by: RKW Checked by: INITIAL Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet

Appendix A

Release Notification

July 2, 2021

Mr. Ron Estel
Pennsylvania Department of Environmental Protection
Southeast Regional Office
Division of Storage Tanks
2 East Main Street
Norristown, PA 19401

sent via UPS – Delivery Confirmation

Subject: **Philadelphia Energy Solutions Refining and Marketing, LLC**
PADEP Notification of Release Form – Tank Group 1
PADEP Facility ID #51-33620 – Point Breeze Refinery
Incident No. 56446
3144 W. Passyunk Avenue
Philadelphia, PA 19141

Dear Mr. Estel:

Enclosed please find a copy of the Pennsylvania Department of Environmental Protection's (PADEP) Notification of Release Form for the Philadelphia Energy Solutions Refining and Marketing, LLC (PESRM) Point Breeze Refinery. The PADEP was notified via telephone on June 23, 2021 that Aboveground Storage Tank (AST) Site Assessment sampling, performed in Tank Group 1, identified constituents in soil at concentrations greater than the applicable PADEP Medium Specific Concentrations (MSCs). Specifically, concentrations greater than applicable MSCs were identified at the following ATSs: PB-668 (008A), PB-666 (043A), and PB-663 (074A).

Please contact me at kevin.long@terraphase.com / 609-236-8171 x93 or Nick Scala at nick.scala@terraphase.com / 609-236-8171 x92 with any questions.

Sincerely,

for Terraphase Engineering Inc.

Kevin Long
Principal Consultant

Nicholas Scala, PG, LSRP
Principal Geologist

KL/NS:cs

Enclosure: PAEP Notification of Release Form (Tank Group 01)

cc: Anne Garr (agarr@hilcoglobal.com)
Joseph Jeray (jjeray@hilcoglobal.com)
Stephanie Eggert (seggert@hilcoglobal.com)
Charles Barksdale (cbarksdale@hilcoglobal.com)
Gary Bowman (gbowman@NorthStar.com)
Bob Armstrong (rarmstrong@NorthStar.com)
Lisa Strobridge (PADEP)
Ralph DiPietro (Philadelphia L & I)

NOTIFICATION OF RELEASE *(Owners and Operators)*

FACILITY I.D. NUMBER 51 - 33620

☒ Initial
☐ Follow-Up

NOTIFICATION OF CONTAMINATION *(Certified Installers and Inspectors)*

INFORMATION FOR OWNERS AND OPERATORS (O/O)

The Storage Tank Program's Corrective Action Process (CAP) regulations establish requirements for owners and operators of storage tank systems and storage tank facilities to report confirmed releases and, in certain cases, suspected releases.

Suspected Release Reporting: Upon the completion of a suspected release investigation from which it could not be determined whether a release has occurred, the owner or operator must, within 15 days of the indication of the suspected release, complete and submit this form to the appropriate regional office of the Department (Subsection 245.304(c)(2)).

Confirmed Release Reporting: The owner or operator must notify the appropriate regional office of the Department by telephone as soon as practicable, but no later than 24 hours, after the confirmation of a release (Subsections 245.305(a) and (b)). Within 15 days of that telephone notification, the owner or operator must complete and submit this form to the appropriate regional office of the Department, to each municipality in which the release occurred, and to each municipality where that release has impacted environmental media or water supplies, buildings, or sewer or other utility lines (Subsections 245.305(c) and (e)). And if new impacts to environmental media or water supplies, buildings, or sewer or other utility lines are discovered after that initial written notification, the owner or operator must, within 15 days of the discovery of the new impact, complete and submit this form to the Department and to each impacted municipality (Subsections 245.305(d) and (e)).

INFORMATION FOR CERTIFIED INSTALLERS AND INSPECTORS (I/I)

In accordance with the Storage Tank Program's certification regulations, certified installers and inspectors must complete and submit this form to the Department within 48 hours of observing any of the following while performing services as a certified installer or inspector: a release of a regulated substance; suspected or confirmed contamination of soil, surface or groundwater from regulated substances; or a regulated substance in a containment structure or facility (Subsections 245.132(a)(4) and 245.132(a)(6)).

INSTRUCTIONS

Record the storage tank facility I.D. number at the top right-hand corner of each page of this form.

Owners and Operators (O/O): Indicate if this is an initial or follow-up notification by marking the appropriate box found in the top right-hand corner of this page.

- To report a Suspected Release, complete all information in Sections I, II, IIIA, IIIC, VI, VIII and IX.
- To report a Confirmed Release, complete all information in Sections I, II, IIIA, IIIB, IIIC, IV, V, VIII and IX.

Certified Installers and Inspectors (I/I): Complete all information in Sections I, II, IIIA, IIIC, VI or VII, VIII, and IX. Attach a copy of the failed, valid tightness test results, if applicable.

PLEASE SEND COMPLETED ORIGINAL FORM TO:
PA Department of Environmental Protection
Environmental Cleanup and Brownfields Program
Storage Tank Section
(and the appropriate address below, depending on where the FACILITY is located)

Northwest Region	North-central Region	Northeast Region
230 Chestnut Street Meadville, PA 16335-3481 PHONE: 814-332-6945 / 800-373-3398 FAX: 814-332-6121	208 W. Third Street, Suite 101 Williamsport, PA 17701 PHONE: 570-327-3636 FAX: 570-327-3420	2 Public Square Wilkes-Barre, PA 18701-1915 PHONE: 570-826-2511 FAX: 570-820-4907
Counties: Armstrong, Butler, Clarion, Crawford, Elk, Erie, Forest, Indiana, Jefferson, Lawrence, McKean, Mercer, Venango, Warren	**Counties:** Bradford, Cameron, Centre, Clearfield, Clinton, Columbia, Lycoming, Montour, Northumberland, Potter, Snyder, Sullivan, Tioga, Union	**Counties:** Carbon, Lackawanna, Lehigh, Luzerne, Monroe, Northampton, Pike, Schuylkill, Susquehanna, Wayne, Wyoming
Southwest Region	**South-central Region**	**Southeast Region**
400 Waterfront Drive Pittsburgh, PA 15222 PHONE: 412-442-4000 FAX: 412-442-4194	909 Elmerton Avenue Harrisburg, PA 17110 PHONE: 717-705-4705 / 800-541-2050 FAX: 717-705-4830	2 East Main Street Norristown, PA 19401 PHONE: 484-250-5900 FAX: 484-250-5961
Counties: Allegheny, Beaver, Cambria, Fayette, Greene, Somerset, Washington, Westmoreland	**Counties:** Adams, Bedford, Berks, Blair, Cumberland, Dauphin, Franklin, Fulton, Huntingdon, Juniata, Lancaster, Lebanon, Mifflin, Perry, York	**Counties:** Bucks, Chester, Delaware, Montgomery, Philadelphia

I. FACILITY INFORMATION (Both O/O and I/I)

Facility Name: Philadelphia Refinery Point Breeze
Facility I.D. Number: 51-33620
Street Address (P.O. Box not acceptable): 3144 W. Passyunk Avenue
City: Philadelphia
State: PA
Zip Code: 19141 - 5299
County: Philadelphia
Municipality: Philadelphia
Contact Person: Anne Garr
Telephone Number: (312) 796 - 6564

II. OWNER/OPERATOR INFORMATION (Both O/O and I/I)

Owner Name: Philadelphia Energy Solutions Refining and Marketing LLC
Address: 111 S. Wacker Dr, Suite 3000
City: Chicago
State: IL
Zip Code: 60606 -
Telephone Number: (312) 796 - 6564
Operator Name: Anne Garr
Telephone Number: (312) 796 - 6564

III. REGULATED SUBSTANCE INFORMATION

A. Type of Product(s) Involved (Mark All That Apply ☒): Both O/O and I/I		B. Quantity (Gallons) of Product(s) Released: O/O Only	C. Contamination Suspected [S] or Confirmed [C] (Mark All That Apply ☒): Both O/O and I/I	
Leaded Gasoline	☐		☐ [S]	☐ [C]
Unleaded Gasoline	☐		☐ [S]	☐ [C]
Aviation Gasoline	☐		☐ [S]	☐ [C]
Kerosene	☐		☐ [S]	☐ [C]
Jet Fuel	☐		☐ [S]	☐ [C]
Diesel Fuel	☐		☐ [S]	☐ [C]
New Motor Oil	☐		☐ [S]	☐ [C]
Used Motor Oil	☐		☐ [S]	☐ [C]
Fuel Oil No. 1	☐		☐ [S]	☐ [C]
Fuel Oil No. 2	☐		☐ [S]	☐ [C]
Fuel Oil No. 4	☐		☐ [S]	☐ [C]
Fuel Oil No. 5	☐		☐ [S]	☐ [C]
Fuel Oil No. 6	☐		☐ [S]	☐ [C]
Other (Specify) Heavy/Light Gas Oil	☒	UNKNOWN	☐ [S]	☒ [C]
Unknown	☐		☐ [S]	☐ [C]

IV. CONFIRMED RELEASE INFORMATION (O/O Only)

Date Release was Confirmed: 06 (m) / 23 (d) / 2021 (y)

Date Owner/Operator Verbally Notified Appropriate Regional Office of Confirmed Release and Office Notified:
Date: 06 (m) / 23 (d) / 2021 (y) Office: Southeast Region

Date Owner/Operator Sent Copy of this Written Notification to Local Municipality(ies) and Name of Municipality(ies) Notified:
Date: ___ (m) / ___ (d) / ___ (y) Municipality: Philadelphia
Date: ___ (m) / ___ (d) / ___ (y) Municipality: ___

Source (Mark All That Apply ☒):

- Tank (DEP Assigned Nos. 008A, 043A, 074A) ☒
- Piping System (Aboveground Regulated) ☒
- Piping System (Underground Regulated) ☐
- Piping System (Non-Regulated) ☐
- Dispenser/Dispensing Equipment ☐
- Spill Prevention Equipment ☐
- Submersible Turbine Pump Head/Fittings ☐
- Containment/Sump Failure ☐
- Other (Specify) ☐
- Unknown ☐

Cause (Mark All That Apply ☒):

- Faulty Installation ☐
- Corrosion ☐
- Physical/Mechanical Failure ☐
- Spill During Delivery ☐
- Overfill at Delivery ☐
- Vehicle Gas Tank Overfill ☐
- Product Delivery Hose Rupture ☐
- Accident/Natural Disaster ☐
- Other (Specify) ☐
- Unknown ☐

How Discovered (Mark All That Apply ☒):

- During Closure ☒
- Lining Installation ☐
- Routine Leak Detection ☐
- Third Party Inspection ☐
- Tightness Testing Activities ☐
- Visible Product or Odor Reports ☐
- Water in Tank ☐
- Construction ☐
- Upgrade/Repair ☐
- Supply Well Sample Results ☐
- Monitoring Well Sample Results ☐
- Property Transfer ☐
- Other (Specify) Site Assessment Sampling ☒
- Unknown ☐

Environmental Media Affected and Impacts (Mark All That Apply ☒):

- Soil ☒
- Sediment ☐
- Surface Water ☐
- Ground Water ☐
- Bedrock ☐
- Water Supplies ☐
- Vapors/Product in Buildings ☐
- Vapors/Product in Sewer/Utility Lines ☐
- Ecological Receptors ☐

V. INTERIM REMEDIAL ACTIONS (O/O Only)

Indicate the Interim Remedial Actions Planned, Initiated or Completed (Mark All That Apply ☒):

	Planned	Initiated	Completed	Not Applicable
Regulated Substance Removed from Storage Tanks	☐	☐	☒	☐
Fire, Explosion and Safety Hazards Mitigated	☐	☐	☒	☐
Contaminated Soil Excavated	☐	☐	☐	☐
Free Product Recovered	☐	☐	☐	☒
Water Supplies Identified and Sampled	☐	☐	☐	☒
Temporary Water Supplies Provided	☐	☐	☐	☒
Other (Specify) Site characterization	☒	☐	☐	☐

VI. SUSPECTED RELEASE / CONTAMINATION INFORMATION (Both O/O and I/I)

Date the Indication of a Suspected Release / Contamination was Observed: 06 (m) / 23 (d) / 2021 (y)

Indication of Suspected Release / Contamination (Mark All That Apply ☒):

- ☐ Unusual Level of Vapors
- ☐ Erratic Behavior of Product Dispensing Equipment
- ☐ Release Detection Results Indicate a Release
- ☐ Discovery of Holes in the Storage Tank
- ☐ Containment Sump Test Failure
- ☐ Spill Prevention Equipment Test Failure
- ☒ Other (Specify) Site Assessment Sampling Results

VII. CONFIRMED CONTAMINATION INFORMATION (I/I Only)

Date the Confirmed Contamination was Observed: 06 (m) / 23 (d) / 2021 (y)

Extent of Confirmed Contamination (Mark All That Apply ☒):

- ☐ Product Stained or Product Saturated Soil or Backfill
- ☐ Ponded Product
- ☐ Free Product or Sheen on Ponded Water
- ☐ Free Product or Sheen on the Ground Water Surface
- ☐ Free Product or Sheen on Surface Water
- ☒ Other (Specify) Site Assessment Sampling Results

VIII. ADDITIONAL INFORMATION (Both O/O and I/I)

Provide any additional, relevant, available information concerning the release or contamination. If reporting a confirmed release, include specific details about the source and cause of the release, the affected environmental media, and any impacts to water supplies, buildings, or sewer or other utility lines. Owners or Operators reporting a suspected release should describe what procedures were followed to investigate the indication(s) of the suspected release noted in Section VI. Provide both DEP-assigned and owner/operator-assigned tank number(s), where applicable. Use additional 8½" x 11" sheets of paper, if necessary.

Work is being performed at the Site in accordance with the Aboveground Storage Tank Closure Work Plan (AST Work Plan) (Terraphase 2021). The PADEP approved the AST Work Plan on April 23, 2021. Pursant to the AST Work Plan, Site Assessment sampling is being performed in Tank Groups. This notification is provided to PADEP to report that the Site Assessment sampling performed in Tank Group 01 has identified chemical concentrations in soil at levels above applicable Statewide Health Medium Specific Concentrations (MSCs).The following chemicals were detected in soil samples at concentrations greater than the applicable MSCs: benzene, toluene, 1,2,4-trimethylbenzene, benzo(a)pyrene, benzo(b)fluoranthene, naphthalene, and lead. Site characterization will be performed to understand the nature and extent of these concentrations above MSCs and to further assess whether these conditions actually reflect a release to the environment from these ASTs.

IX. CERTIFICATION (Both O/O and I/I)

OWNER OR OPERATOR CERTIFICATION

I, Anne Garr, Assistant Secretary, hereby certify, under penalty of law as provided in 18 Pa.
(Print Name)

C.S.A. §4904 (relating to unsworn falsification to authorities) that I am the owner or operator of the above referenced storage tank facility and that the information provided by me in this notification is true, accurate and complete to the best of my knowledge and belief.

Signature of Owner or Operator — Date: 07/ 01 / 2021

CERTIFIED INSTALLER CERTIFICATION

I, _____, hereby certify, under penalty of law as provided in 18 Pa.
(Print Name)

C.S.A. §4904 (relating to unsworn falsification to authorities) that I am the certified installer who performed tank handling activities at the above referenced storage tank facility and that the information provided by me in this notification is true, accurate and complete to the best of my knowledge and belief.

Signature of Certified Installer — Date: / /

Installer Certification Number — Company Certification Number

CERTIFIED INSPECTOR CERTIFICATION

I, _____, hereby certify, under penalty of law as provided in 18 Pa.
(Print Name)

C.S.A. §4904 (relating to unsworn falsification to authorities) that I am the certified inspector who performed inspection activities at the above referenced storage tank facility and that the information provided by me in this notification is true, accurate and complete to the best of my knowledge and belief.

Signature of Certified Inspector — Date: / /

Inspector Certification Number — Company Certification Number

Appendix B

Historical Soil Sampling Results

Table B
Historical Soil Sampling Results
Tank Group 01
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Collection Depth (ft bgs) Sample Date Comments	Non-Res Direct Contact with Surface Soil MSCs	Non-Res Direct Contact with Subsurface Soil MSCs	Non-Residential Soil-to-GW MSCs Used Aquifer TDS≤2500	Non-Residential Soil Vapor Intrusion Screening Value	663 AREA-1 AOI8 0 - 0.5 6/4/2004	663 AREA-2 AOI8 0 - 0.5 6/4/2004	663 AREA-3 AOI8 0 - 0.5 6/4/2004	663 AREA-4 AOI8 0 - 0.5 6/4/2004	666-PE-1 0.5 - 1 5/14/2013	666-PE-2 0.25 - 0.75 5/14/2013	666-PE-3 0.25 - 0.75 5/14/2013	666-PE-4 0.25 - 0.75 5/14/2013	666-PE-5 0.25 - 0.75 5/14/2013	666-PE-6 0.25 - 0.75 5/14/2013
Volatile Organic Compounds														
Benzene	280	330	0.5	0.13	ND (0.14)	ND (0.26)	ND (0.14)	ND (0.0048)	0.001 J (0.006)	ND (0.005)	0.0005 J (0.005)	ND (0.005)	0.001 J (0.005)	0.023 (0.005)
Semi-Volatile Organic Compounds														
Benzo(a)pyrene	91	190000	46		56 AP (45)	26 AP (23)	6 J (22)	5.2 J (19)	2.2 (0.37)	1.6 (0.089)	4.5 (0.18)	0.55 (0.35)	2.1 (0.18)	12 (0.37)
Benzo(b)fluoranthene	76	190000	170		**80 AP (45)**	32 (23)	6.7 J (22)	4.4 J (19)	3.2 (0.37)	1.8 (0.089)	4.9 (0.18)	0.44 (0.35)	1.4 (0.18)	7.7 (0.37)
1,1-Biphenyl	34	40	1.5	190	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	240	270	100	1900	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	66	77	25	25	7.8 (0.57)	*31 (1)*	8.1 (0.57)	ND (0.11)	ND (0.006)	ND (0.005)	0.004 J (0.005)	ND (0.005)	0.04 (0.005)	0.97 (0.24)
Metals														
Lead	1000	190000	450		NA	NA	NA	NA	636 (1.58)	687 (1.53)	198 (1.52)	107 (1.54)	26 (1.59)	311 (1.55)
Zinc	190000	190000	12000		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
1 All concentrations are presented in mg/kg (ppm). Detection limts are in parentheses.
2 Only compounds with at least one detection are shown.
3 AP is an unknown qualifer.
4 Boldfaced concentrations exceed the Non-Res Direct Contact with Surface Soil MSCs and the Non-Res Direct Contact with Subsurface Soil MSCs .
5 Underlined concentrations exceed the Non-Residential Soil-to-GW MSCs Used Aquifer TDS≤2500.
6 Italicized and blue font concentrations exceed the Non-Residential Soil Vapor Intrusion Screening Value.

Abbreviations:
ND -- Not Detected.
NA -- Not Analyzed.
J -- Estimated Concentration.

Table B
Historical Soil Sampling Results
Tank Group 01
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Collection Depth (ft bgs) Sample Date Comments	Non-Res Direct Contact with Surface Soil MSCs	Non-Res Direct Contact with Subsurface Soil MSCs	Non-Residential Soil-to-GW MSCs Used Aquifer TDS≤2500	Non-Residential Soil Vapor Intrusion Screening Value	666-PE-7 0.25 - 0.75 5/14/2013	666-PE-8 0.25 - 0.75 5/14/2013	AOI8-BH-16-059 0 - 2 8/11/2016	AOI8-BH-16-059 6 - 8 9/15/2016	AOI8-BH-16-060 0 - 2 8/11/2016	AOI8-BH-16-060 4 - 6 9/16/2016	AOI8-BH-16-061 0 - 2 8/11/2016	AOI8-BH-16-061 6 - 8 9/16/2016	AOI8-BH-16-062 0 - 2 9/13/2016	AOI8-BH-16-062 12 - 14 9/13/2016
Volatile Organic Compounds														
Benzene	280	330	0.5	0.13	0.0006 J (0.005)	0.0005 J (0.005)	ND (0.00183)	ND (0.00134)	ND (0.0387)	ND (0.00156)	ND (0.00394)	ND (0.00131)	ND (0.00127)	ND (0.00124)
Semi-Volatile Organic Compounds														
Benzo(a)pyrene	91	190000	46		2 (0.19)	0.2 (0.018)	ND (8.81)	0.257 (0.0443)	2.02 (0.929)	ND (0.0515)	37.9 (16.7)	23.8 (0.837)	ND (0.0421)	0.112 (0.0411)
Benzo(b)fluoranthene	76	190000	170		2.5 (0.19)	0.25 (0.018)	ND (8.81)	0.366 (0.0443)	3.14 (0.929)	ND (0.0515)	56.6 (16.7)	31.5 (0.837)	ND (0.0421)	0.148 (0.0411)
1,1-Biphenyl	34	40	1.5	190	NA	NA	ND (88.9)	ND (0.447)	ND (4.69)	ND (0.52)	ND (168)	ND (8.44)	ND (0.424)	ND (0.415)
2-Methylnaphthalene	240	270	100	1900	NA	NA	ND (8.81)	ND (0.0443)	ND (0.464)	ND (0.0515)	ND (16.7)	ND (0.837)	ND (0.0421)	ND (0.0411)
Naphthalene	66	77	25	25	ND (0.005)	ND (0.005)	ND (8.81)	ND (0.0443)	ND (0.464)	ND (0.0515)	ND (16.7)	ND (0.837)	ND (0.0421)	ND (0.0411)
Metals														
Lead	1000	190000	450		**2200 (8.16)**	110 (1.5)	**95000 (6.67)**	152 (0.671)	**2650 (0.703)**	245 (0.781)	**1320 (6.32)**	149 (3.17)	26.7 (0.637)	49.8 (0.622)
Zinc	190000	190000	12000		NA	NA	4510 (66.7)	288 (6.71)	2430 (70.3)	117 (7.81)	1550 (63.2)	423 (31.7)	53.5 (6.37)	63.4 (6.22)

Notes:
1 All concentrations are presented in mg/kg (ppm). Detection limts are in parentheses.
2 Only compounds with at least one detection are shown.
3 AP is an unknown qualifer.
4 Boldfaced concentrations exceed the Non-Res Direct Contact with Surface Soil MSCs and the Non-Res Direct Contact with Subsurface Soil MSCs .
5 Underlined concentrations exceed the Non-Residential Soil-to-GW MSCs Used Aquifer TDS≤2500.
6 Italicized and blue font concentrations exceed the Non-Residential Soil Vapor Intrusion Screening Value.

Abbreviations:
ND -- Not Detected.
NA -- Not Analyzed.
J -- Estimated Concentration.

Table B
Historical Soil Sampling Results
Tank Group 01
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Collection Depth (ft bgs) Sample Date Comments	Non-Res Direct Contact with Surface Soil MSCs	Non-Res Direct Contact with Subsurface Soil MSCs	Non-Residential Soil-to-GW MSCs Used Aquifer TDS≤2500	Non-Residential Soil Vapor Intrusion Screening Value	AOI8-BH-16-067 0 - 2 7/28/2016	AOI8-BH-16-068 0 - 2 7/28/2016	AOI8-BH-16-069 0 - 2 7/28/2016	AOI8-BH-16-073 0 - 2 9/13/2016	AOI8-BH-16-073 12 - 14 9/13/2016	AOI8-BH-16-078 0 - 2 10/18/2016	AOI8-BH-16-079 0 - 2 10/18/2016	AOI8-BH-16-080 0 - 2 10/18/2016	AOI8-BH-16-083 0 - 2 3/28/2017	BH-08-34 1.5 - 2 5/6/2008
Volatile Organic Compounds														
Benzene	280	330	0.5	0.13	NA	NA	NA	0.116 (0.032)	ND (1.34)	NA	NA	NA	NA	ND (0.26)
Semi-Volatile Organic Compounds														
Benzo(a)pyrene	91	190000	46		1.05 (0.143)	1.53 (0.156)	2.58 (0.135)	ND (4.3)	3.58 (2.5)	NA	NA	NA	0.123 (0.00743)	29 (1.9)
Benzo(b)fluoranthene	76	190000	170		NA	NA	NA	ND (4.3)	3.32 (2.5)	NA	NA	NA	NA	39 (1.9)
1,1-Biphenyl	34	40	1.5	190	NA	NA	NA	ND (4.34)	ND (25.2)	NA	NA	NA	NA	NA
2-Methylnaphthalene	240	270	100	1900	NA	NA	NA	1.56 (0.43)	145 (5)	NA	NA	NA	NA	NA
Naphthalene	66	77	25	25	NA	NA	NA	ND (0.43)	10.4 (2.5)	NA	NA	NA	NA	ND (1.9)
Metals														
Lead	1000	190000	450		NA	NA	NA	124 (0.652)	1660 (0.757)	**3450 (3.37)**	**1030 (0.675)**	36.8 (0.623)	NA	354 (1.12)
Zinc	190000	190000	12000		NA	NA	NA	149 (6.52)	549 (7.57)	NA	NA	NA	NA	NA

Notes:
1 All concentrations are presented in mg/kg (ppm). Detection limts are in parentheses.
2 Only compounds with at least one detection are shown.
3 AP is an unknown qualifer.
4 Boldfaced concentrations exceed the Non-Res Direct Contact with Surface Soil MSCs and the Non-Res Direct Contact with Subsurface Soil MSCs .
5 Underlined concentrations exceed the Non-Residential Soil-to-GW MSCs Used Aquifer TDS≤2500.
6 Italicized and blue font concentrations exceed the Non-Residential Soil Vapor Intrusion Screening Value.

Abbreviations:
ND -- Not Detected.
NA -- Not Analyzed.
J -- Estimated Concentration.

Table B
Historical Soil Sampling Results
Tank Group 01
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Collection Depth (ft bgs) Sample Date Comments	Non-Res Direct Contact with Surface Soil MSCs	Non-Res Direct Contact with Subsurface Soil MSCs	Non-Residential Soil-to-GW MSCs Used Aquifer TDS≤2500	Non-Residential Soil Vapor Intrusion Screening Value	BH-13-66 0 - 2 11/6/2013	BH-13-66 4 - 6 11/6/2013	N-145 0 - 2 11/6/2013	N-145 8 - 10 11/8/2013	N-146 0 - 2 11/6/2013	N-146 17 - 18 11/7/2013	N-154 0 - 2 7/11/2016	N-154 10 - 12 8/8/2016
Volatile Organic Compounds												
Benzene	280	330	0.5	0.13	ND (0.00087)	*0.939 (0.27)*	ND (0.0011)	*20.3 (0.17)*	ND (0.00098)	ND (0.11)	ND (0.0298)	ND (0.00126)
Semi-Volatile Organic Compounds												
Benzo(a)pyrene	91	190000	46		0.231 (0.035)	0.196 (0.15)	0.336 (0.033)	1.69 (0.2)	0.286 (0.037)	0.487 (0.036)	3.55 (2.43)	22.3 (20.7)
Benzo(b)fluoranthene	76	190000	170		0.258 (0.035)	0.207 (0.15)	0.353 (0.033)	1.65 (0.2)	0.33 (0.037)	0.523 (0.036)	2.85 (2.43)	32 (20.7)
1,1-Biphenyl	34	40	1.5	190	ND (0.07)	ND (0.3)	ND (0.067)	1.54 (0.39)	ND (0.074)	ND (0.073)	ND (24.5)	ND (209)
2-Methylnaphthalene	240	270	100	1900	ND (0.07)	0.271 J (0.3)	ND (0.067)	105 (3.9)	ND (0.074)	ND (0.073)	ND (2.43)	ND (20.7)
Naphthalene	66	77	25	25	ND (0.035)	ND (0.15)	ND (0.033)	7.08 (0.2)	ND (0.037)	ND (0.036)	ND (2.43)	ND (20.7)
Metals												
Lead	1000	190000	450		48.1 (0.91)	345 (0.99)	49 (1.1)	379 (1.2)	125 (0.93)	31.9 (1.1)	**5890 (3.67)**	327 (0.629)
Zinc	190000	190000	12000		89.5 (1.8)	167 (2)	109 (2.2)	415 (2.4)	190 (1.9)	75 (2.3)	2220 (36.7)	12200 (314)

Notes:
1 All concentrations are presented in mg/kg (ppm). Detection limts are in parentheses.
2 Only compounds with at least one detection are shown.
3 AP is an unknown qualifer.
4 Boldfaced concentrations exceed the Non-Res Direct Contact with Surface Soil MSCs and the Non-Res Direct Contact with Subsurface Soil MSCs .
5 Underlined concentrations exceed the Non-Residential Soil-to-GW MSCs Used Aquifer TDS≤2500.
6 Italicized and blue font concentrations exceed the Non-Residential Soil Vapor Intrusion Screening Value.

Abbreviations:
ND -- Not Detected.
NA -- Not Analyzed.
J -- Estimated Concentration.

Appendix C

Select Figures from the AOI-8 RIR

Tank Group 01

I NORTH — I' SOUTH

PROPANE TERMINAL | AOI-8 - PES NORTH YARD BALL FIELD AREA | AOI-8 | LAND TREATMENT UNIT | AOI-8 | CSX PROPERTY | AOI-8 | NORTH YARD CRUDE RAIL | AOI-8

N-99, N-100, N-2, N-154, N-5, N-69, N-70, N-83, N-109, N-114, N-39, N-131, N-55, N-149D

FILL
PLEISTOCENE ALLUVIUM
UPPER CLAY UNIT
UPPER SAND UNIT
MIDDLE CLAY UNIT
MIDDLE SAND UNIT?
LOWER SAND UNIT
BEDROCK
MIDDLE CLAY AND SAND UNITS?
Schuylkill River
HOLOCENE ALLUVIUM
PLEISTOCENE ALLUVIUM

APPROXIMATE LOCATION AND SIZE OF THE MIFFLIN STREET SEWER

APPROXIMATE LOCATION AND DIAMETER OF THE JACKSON STREET SEWER

Legend:
- May 2017 Perched Water Elevation
- May 2017 Water-Table Elevation
- May 2017 Water-Level Elevation (Lower Aquifer)
- May 2017 Interpolated Water-Table Surface
- May 2017 Interpolated Lower Aquifer Surface
- Inferred Geologic Contact
- Inferred Lithologic Contact
- Interpolated Bedrock Surface

Elevation (ft NAVD88)

Distance Along Baseline (ft)

Stantec

STRATIGRAPHIC PROFILE INTERPRETED BY ANDREW D. KLINGBEIL, PENNSYLVANIA PROFESSIONAL GEOLOGIST PG005029

GENERALIZED LITHOLOGY GRAPHICS

- Apparent Fill
- Sandy Gravel
- Gravelly Sand
- Sand (incl. trace to little silt/clay/gravel)
- "Muddy" Sand
- Organic-Rich "Mud" (silt/clay, incl. some organic material)
- "Mud" (silt/clay, incl. trace to little sand/gravel)
- Bedrock (incl. saprolite where indicated)
- Peat

Notes:

1. Land surface profile obtained from a 2015 Light Detection and Ranging (LiDAR) elevation model available from the United States Geological Survey (USGS).
2. Schuylkill River bathymetry obtained from NOAA National Centers for Environmental Information and is based on a 1/9 arc second, 2014 elevation model referenced to NAVD 88.
3. Water-table, lower aquifer, and bedrock surfaces were interpolated from selected May 2017 gauging and stratigraphic "pick" data using block kriging (note block kriging is not an exact interpolator). Not all wells were gauged during May 2017. Screen lengths estimated for wells N-2 and N-5.
4. Stantec generalized lithologic data from available borehole logs into 9 categories as indicated for interpretive purposes. "Mud" is utilized in these profiles to generally represent clay/silt mixtures, or clay and silt-rich sandy sediments.
5. Correlation between lithologies and, where applicable, geologic units is based primarily on the straight-line method with additional stratigraphic interpretation where subsurface data is limited. Actual conditions between boreholes may vary from what is shown on this profile.
6. Sewer data obtained from the Philadelphia Water Department Water Transport Records.
7. North American Vertical Datum of 1988 = NAVD 88
8. Vertical Exaggeration ~ 25 X

Figure 2-7. Stratigraphic Profile I - I'

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

Project Number: 213402435

Schuylkill River

Tank Group 01

AOI 8

Jackson Street Sewer

CSX RAILROAD

Rambo Creek Sewer

Rambo Creek Sewer (Approximate)

Passyunk Ave Sewer

Shunk Street Sewer

Belmont Terminal

N-146 1.94
N-137 0.14
N-138 0.42
N-142 0.16
N-139 0.29
V-MW-7 0.01
V-MW-5 <0.01
N-14 0.32
N-102 1.56
N-68 0.70
N-108 0.51
N-107 0.16
N-83 0.03
RW-300 0.42
RW-502 0.60
N-503 0.56
RW-301 <0.01
RW-306 0.08
N-112 2.94
N-34 0.26
N-25 0.69
N-113 1.96
N-115 0.20
N-42 0.01
N-116 1.86
N-56 0.05
PZ-501 0.10
PZ-502 0.35
N-59 0.01
N-61 0.40
N-74 0.06
N-151 4.00
PZ-204 1.70
N-82 2.80
PGW-MW-45 0.04
N-47 0.85
N-129 0.66
N-48 2.85
RW-206 4.37
PZ-201 0.80
N-76 0.28
PZ-202 0.44
PGW-MW-30 2.47
N-51 3.73
N-127 0.69
RW-205 3.30
RW-204 1.90
N-49 1.05
N-130 1.01
RW-202 0.45
PGW-MW-31 0.76
PGW-MW-10A 0.09
PGW-MW-40A 0.02
PGW-MW-26A 0.02
PGW-MW-33 0.10
PGW-MW-37 0.13
PGW-MW-25 0.61
PGW-MW-16 0.07
RW-201 0.47
PGW-MW-20 0.01
PGW-MW-7 0.48

0 500 1,000 Feet

1:3,000 (At original document size of 22x34)

Legend

2016 Gauging Location and Maximum Observed LNAPL Thickness*

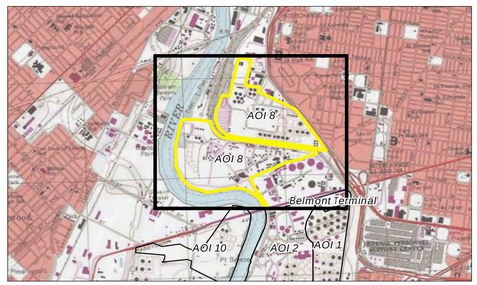
- No Measurable LNAPL Thickness in 2016
- Observed Sheen in 2016
- 0.01 - 0.10
- 0.11 - 0.50
- 0.51 - 1.00
- 1.01 - 3.00
- 3.01 - 6.00+
- Submerged Screen
- AOI 8
- Area of Interest (AOI)
- Sewer Line (dashed where approximate)

GENERALIZED LNAPL TYPE

- LIGHT DISTILLATE
- MIXES OF LIGHT/MIDDLE DISTILLATE
- MIXES OF LIGHT/HEAVY DISTILLATE
- MIDDLE DISTILLATE
- MIXES OF MIDDLE/HEAVY DISTILLATE
- HEAVY DISTILLATE

Notes

1. Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet
2. Basemap: 2016 orthoimagery from http://maps.psiee.psu.edu/ImageryNavigator/ (Main Map) and ArcGIS USA Topo Maps (Key Map).
3. *LNAPL plume outlines are generalized and based on 2015-2016 gauging data. Maximum LNAPL thickness observed in 2016 are depicted (in units of feet). The 2016 maxima were used in the LCSM for mobility evaluation.



Project Location

CITY OF PHILADELPHIA, PENNSYLVANIA

213402435

Prepared by LB on 2017-09-19
Technical Review by AP on 2017-09-22
Independent Review by JLM on 2017-11-02

Client/Project

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

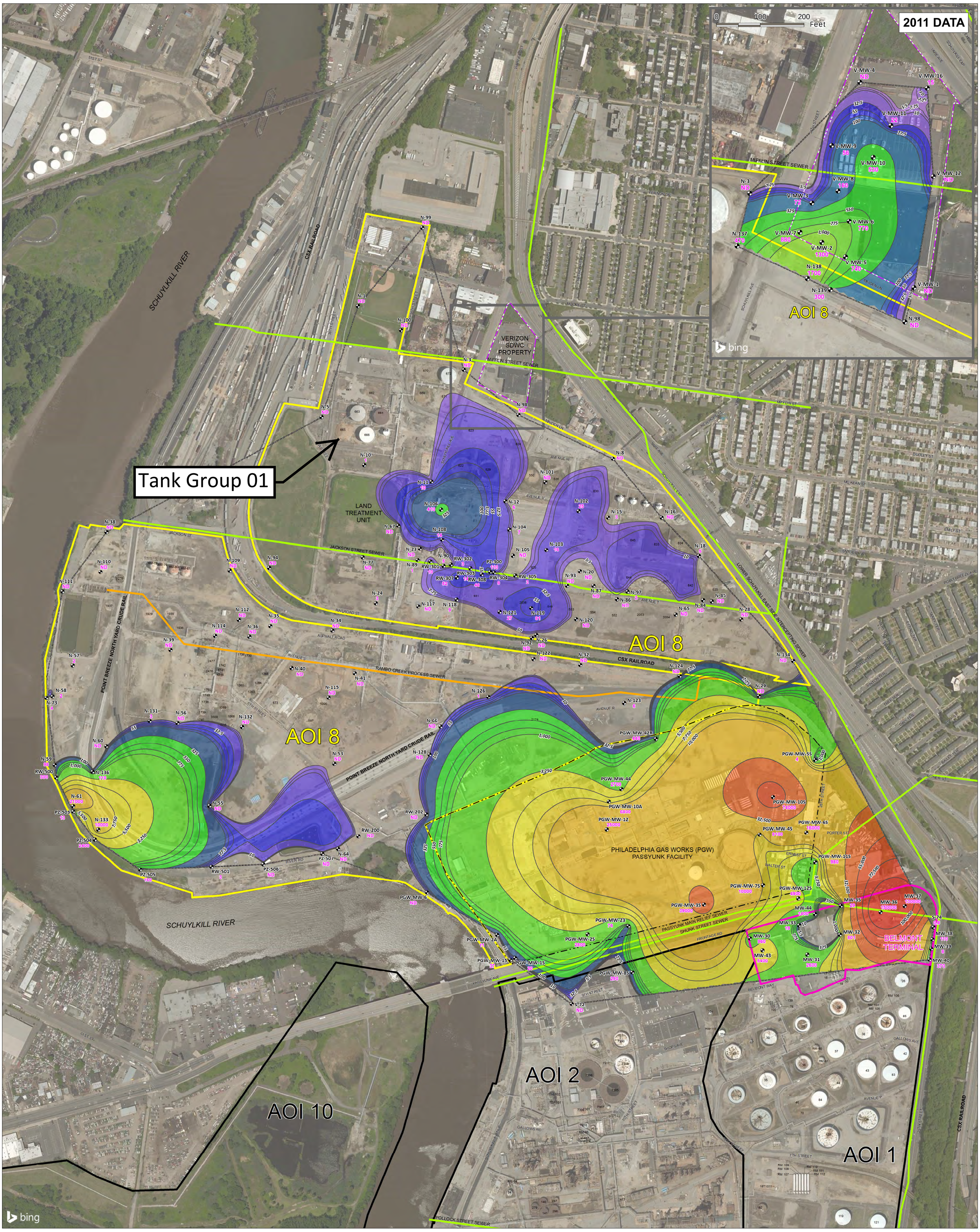
Figure No.

6-1

Title

Generalized LNAPL Type and Extent

V:\1905\miscellaneous\PHL\GIS\mxd\AOI8\fig6-1_lnapl_plume_34x22.mxd Revised: 2017-11-29 By: lhest



Notes

1. Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet North American Vertical Datum of 1988 (NAVD 88)
2. Sources: Stantec
3. Labels denote well identifier and benzene concentration in micrograms per liter (ug/L).
4. Contour Interval = Logarithmic (3 levels per log cycle)
5. Analytical data was interpolated using the Kriging gridding method in Surfer.
6. Aerial & Topo © 2017 DigitalGlobe ©CNES (2017) Distribution Airbus DS © 2017 Microsoft Corporation
   Copyright:© 2013 National Geographic Society, i-cubed
   Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation

LEGEND

- MONITORING/RECOVERY WELL
- BENZENE MAXIMUM CONCENTRATION (ug/L)
- APPROXIMATE LOCATION OF PHILADELPHIA WATER DEPARTMENT SEWER
- APPROXIMATE LOCATION OF RAMBO CREEK PROCESS SEWER
- PHILADELPHIA GAS WORKS (PGW) PASSYUNK FACILITY
- VERIZON SOUTH DISTRICT WORK CENTER (SDWC) PROPERTY
- AREA OF INTEREST (AOI) BOUNDARY
- AOI 8 BOUNDARY
- BELMONT TERMINAL
- CROPPED GRID EXTENT
- 160 MAXIMUM CONCENTRATION OF BENZENE [ug/L]
- ND NOT DETECTED

BENZENE CONCENTRATION SCALE (ug/L)

100000 +
77500
55000
32500
10000
7750
5500
3250
1000
775
550
325
100
77.5
55
32.5
10
7.75
5.5

0 275 550 Feet

1:3,411 (At original document size of 24x36)

N

Figure No.

9-1

Title

UNCONFINED AQUIFER BENZENE MAXIMUM CONCENTRATION - 2002 TO 2008 DATA (WITH 2011 INSET MAP)

Client/Project

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

Project Location

City of Philadelphia,
Philadelphia County,
Pennsylvania

213402435
Prepared by GWC on 11/20/2017
Technical Review by ADK on 11/20/2017
Independent Review by JLM on 11/27/2017

Stantec

EVERGREEN

Tank Group 01

AOI 8

AOI 10

AOI 2

AOI 1

VERIZON SDWC PROPERTY

LAND TREATMENT UNIT

PHILADELPHIA GAS WORKS (PGW) PASSYUNK FACILITY

BELMONT TERMINAL

SCHUYLKILL RIVER

CSX RAILROAD

MIFFLIN STREET SEWER

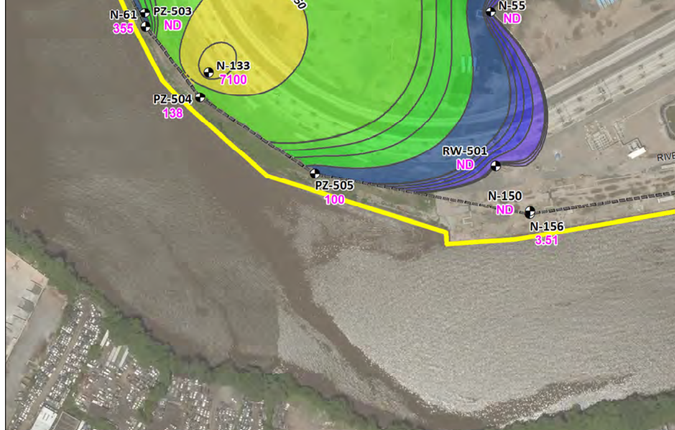
JACKSON STREET SEWER

RAMBO CREEK PROCESS SEWER

POINT BREEZE NORTH YARD CRUDE RAIL

PASSYUNK MAIN RELIEF SEWER

SCHUYLKILL EXP - LOWER SCHUYLKILL EASTSIDE INTERCEPTING SEWER



Notes

1. Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet North American Vertical Datum of 1988 (NAVD 88)
2. Sources: Stantec
3. Labels denote well identifier and benzene concentration in micrograms per liter (ug/L).
4. Contour Interval = Logarithmic (3 levels per log cycle)
5. Analytical data was interpolated using the Kriging gridding method in Surfer.
6. Aerial & Topo © 2017 DigitalGlobe ©CNES (2017) Distribution Airbus DS © 2017 Microsoft Corporation
   Copyright:© 2013 National Geographic Society, i-cubed
   Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation

LEGEND

- MONITORING/RECOVERY WELL
- 2014 TO 2016 BENZENE MAXIMUM CONCENTRATION (ug/L)
- APPROXIMATE LOCATION OF PHILADELPHIA WATER DEPARTMENT SEWER
- APPROXIMATE LOCATION OF RAMBO CREEK PROCESS SEWER
- PHILADELPHIA GAS WORKS (PGW) PASSYUNK FACILITY
- VERIZON SOUTH DISTRICT WORK CENTER (SDWC) PROPERTY
- AREA OF INTEREST (AOI) BOUNDARY
- AOI 8 BOUNDARY
- BELMONT TERMINAL
- CROPPED GRID EXTENT
- 150 MAXIMUM CONCENTRATION OF BENZENE [ug/L]
- ND NOT DETECTED

BENZENE CONCENTRATION SCALE (ug/L)

100000+
77500
55000
32500
10000
7750
5500
3250
1000
775
550
325
100
77.5
55
32.5
10
7.75
5.5

0 275 550 Feet

1:3,300 (At original document size of 24x36)

N

Figure No.

9-2

Title

UNCONFINED AQUIFER BENZENE MAXIMUM CONCENTRATION - 2014 TO 2016 DATA

Client/Project

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

Project Location

City of Philadelphia,
Philadelphia County,
Pennsylvania

213402435
Prepared by GWC on 11/20/2017
Technical Review by ADK on 11/20/2017
Independent Review by JLM on 11/27/2017

Stantec

EVERGREEN

Tank Group 01

AOI 8

AOI 8

AOI 10

AOI 2

AOI 1

VERIZON SDWC PROPERTY

BELMONT TERMINAL

PHILADELPHIA GAS WORKS (PGW) PASSYUNK FACILITY

LAND TREATMENT UNIT

SCHUYLKILL RIVER

CSX RAILROAD

MIFFLIN STREET SEWER

JACKSON STREET SEWER

RAMBO CREEK PROCESS SEWER

POINT BREEZE NORTH YARD CRUDE RAIL

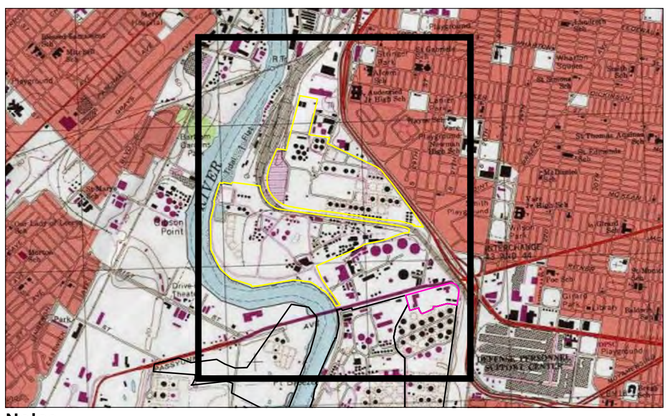
PASSYUNK MAIN RELIEF SEWER

SHUNK STREET SEWER

POLLOCK STREET SEWER

LOWER SCHUYLKILL EAST SIDE INTERCEPTING SEWER

bing



Notes

1. Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet North American Vertical Datum of 1988 (NAVD 88)
2. Sources: Stantec
3. Labels denote well identifier and lead concentration in micrograms per liter (ug/L).
4. Aerial & Topo © 2017 DigitalGlobe ©CNES (2017) Distribution Airbus DS © 2017 Microsoft Corporation
   Copyright:© 2013 National Geographic Society, i-cubed
   Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation

LEGEND

- MONITORING/RECOVERY WELL

MAXIMUM OBSERVED LEAD CONCENTRATION – 2016 (ug/L)

- < 5
- 5.1 - 100
- 100.1 - 1000
- 1000.1 - 5000
- > 5000
- APPROXIMATE LOCATION OF PHILADELPHIA WATER DEPARTMENT SEWER
- APPROXIMATE LOCATION OF RAMBO CREEK PROCESS SEWER
- PHILADELPHIA GAS WORKS (PGW) PASSYUNK FACILITY
- VERIZON SOUTH DISTRICT WORK CENTER (SDWC) PROPERTY
- AREA OF INTEREST (AOI) BOUNDARY
- AOI 8 BOUNDARY
- BELMONT TERMINAL
- 246 MAXIMUM CONCENTRATION OF LEAD [ug/L]
- ND NOT DETECTED
- NA WELL NOT AVAILABLE/NOT SAMPLED

0 275 550 Feet

1:3,411 (At original document size of 24x36)

N

Figure No.

9-3

Title

UNCONFINED AQUIFER LEAD MAXIMUM CONCENTRATION - 2016 DATA

Client/Project

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

Project Location

City of Philadelphia,
Philadelphia County,
Pennsylvania

213402435
Prepared by GWC on 11/20/2017
Technical Review by ANP on 11/21/2017
Independent Review by JLM on 11/27/2017

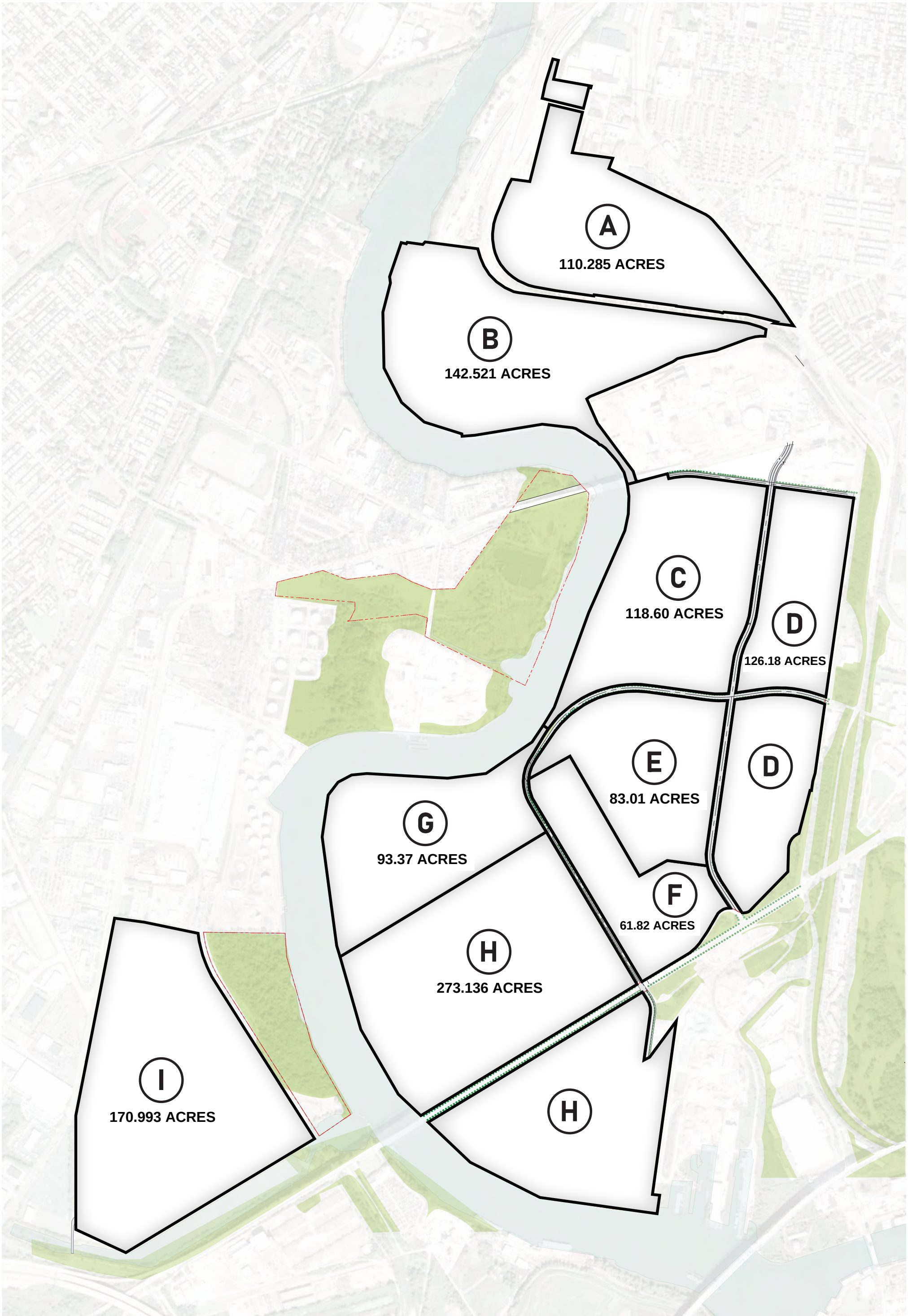
Stantec

EVERGREEN

Appendix D

Individual Parcel Map

INDIVIDUAL PARCEL MAP



HRP

The Bellwether District
AN HRP PROJECT

Appendix E

Tank Registration Amendment Forms

2630-PM-BECB0514 Rev. 6/2019
Form

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF ENVIRONMENTAL CLEANUP AND BROWNFIELDS

STORAGE TANKS REGISTRATION / PERMITTING APPLICATION FORM

Before completing this form, read the step-by-step instructions provided in this application package.

	DEP USE ONLY
	Client ID#
51-33620 Facility ID #	Site ID#
	Account #
	Auth ID#
Phila Ref Point Breeze Facility Name	APS ID#
	Master Auth ID#

I. PURPOSE OF SUBMITTAL

INITIAL (Applies to First-Time Facility Registration)

- ☐ Register Tanks(s) to be Used*
- ☐ Register Tank(s) to be Removed
- ☐ Register Tank(s) to be Temporarily Out of Use
- ☐ Register Tank(s) to be Closed in Place

AMENDED (Applies to Currently Registered Tank(s) or Existing Facility)

- ☐ Changed Owner Information
- ☐ Changed Facility Information
- ☐ Changed to Currently In Use Tank(s)*
- ☐ Changed to Temporarily Out of Use Tank(s)
- ☐ Changed Product
- ☐ Changed Contact Information
- ☐ Changed Facility Operator Information
- ☐ Added Tank(s) to Existing Facility*
- ☒ Changed to Permanently Closed Tank(s)/Removed
- ☐ Changed to Exempt Tank(s)

CHANGE OF OWNERSHIP

- ☐ Tanks Changed Ownership and Remain at Same Facility*

* **For Underground Storage Tanks (UST), attach the UST Operator Training Documentation Form (2630-PM-BECB0514a) and copies of the Class A and Class B operator training certificates.**

II. CURRENT OR NEW TANK OWNER / CLIENT INFORMATION

DEP Client ID#	Client Type/Code	Fee Kind (check one if applicable)		
298341		☐ Volunteer Fire Co/EMS Org	☐ State Govt	☐ Fed Govt

Organization Name or Registered Fictitious Name		Employer ID# (EIN)		Dun & Bradstreet ID#
Philadelphia Energy Solutions Refining and Marketing, LLC				
Individual Last Name	**First Name**	**MI**	**Suffix**	**SSN**
Bowman	Gary	P	Sr	
Additional Individual Last Name	**First Name**	**MI**	**Suffix**	**SSN**
Mailing Address Line 1	**Mailing Address Line 2**			
3144 W. Passyunk Ave				
Address Last Line – City	**State**	**ZIP+4**	**Country**	
Philadelphia	PA	19141-5299	USA	
Client Contact Last Name	**First Name**	**MI**	**Suffix**	
Bowman	Gary	P	Sr	
Client Contact Title		**Phone**	**Ext**	
President		610 636-4574		
E-mail Address			**FAX**	
Gbowman@northtar.com				

III. SITE INFORMATION

DEP Site ID# | Site Name

EPA ID# | Estimated Number of Employees to be Present at Site

Description of Site

County Name | Municipality | City ☐ | Boro ☐ | Twp ☐ | State

County Name | Municipality | City ☐ | Boro ☐ | Twp ☐ | State

Site Location Line 1 | Site Location Line 2

Site Location Last Line – City | State | ZIP+4

Detailed Written Directions to Site

Site Contact Last Name | First Name | MI | Suffix

Site Contact Title | Site Contact Firm

Mailing Address Line 1 | Mailing Address Line 2

Address Last Line – City | State | ZIP+4

Phone | Ext | FAX | E-mail Address

NAICS Codes (Two- & Three-Digit Codes – List All That Apply) | 6-Digit Code (Optional)

Site to Client Relationship

IIIa. PROPERTY OWNER INFORMATION

☐ Same as Tank Owner Identified in Section II. ☐ Different than Tank Owner Identified in Section II; identified below.

Organization Name or Registered Fictitious Name | Employer ID# (EIN) | Dun & Bradstreet ID#

Individual Last Name | First Name | MI | Suffix | SSN

Additional Individual Last Name | First Name | MI | Suffix | SSN

Mailing Address Line 1 | Mailing Address Line 2

Address Last Line – City | State | ZIP+4 | Country

Property Owner Contact Last Name | First Name | MI | Suffix

Property Owner Contact Title | Phone | Ext

E-mail Address | FAX

IV. FACILITY INFORMATION

DEP Storage Tank Facility ID#	Facility Name	Facility Kind

Facility Location Line 1 (if different than Site Location)	Facility Location Line 2

Facility Location Last Line - City	State	ZIP+4

Latitude/Longitude Point of Origin	Latitude			Longitude		
	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds

Horizontal Accuracy Measure	Feet	*--or--*	Meters
Horizontal Reference Datum Code	☐ North American Datum of 1927 ☐ North American Datum of 1983 ☐ World Geodetic System of 1984		
Horizontal Collection Method Code			
Reference Point Code			
Altitude	Feet	*--or--*	Meters
Altitude Datum Name	☐ The National Geodetic Vertical Datum of 1929 ☐ The North American Vertical Datum of 1988 (NAVD88)		
Altitude (Vertical) Location Datum Collection Method Code			
Geometric Type Code			
Data Collection Date			

Source Map Scale Number		Inch(es)	=	Feet
	--or--	Centimeter(s)	=	Meters

Flammable & Combustible Liquid Permit # (if applicable)
State or Municipality that Issued the Permit

FACILITY OPERATOR INFORMATION

☐ **Same as Owner Identified in Section II.** ☐ **Different than Owner Identified in Section II; identified below.**

DEP Client ID#	Client Type / Code

Organization Name or Registered Fictitious Name	Employer ID# (EIN)	Dun & Bradstreet ID#

Individual Last Name	First Name	MI	Suffix	SSN

Additional Individual Last Name	First Name	MI	Suffix	SSN

Mailing Address Line 1	Mailing Address Line 2

Address Last Line – City	State	ZIP+4	Country

Client Contact Last Name	First Name	MI	Suffix

Client Contact Title	Phone	Ext

E-mail Address	FAX

V. CHANGE OF OWNERSHIP INFORMATION

☐ **All Tanks Changed Ownership at the Facility**

☐ **Some Tanks Changed Ownership at the Facility** (List all applicable tank numbers in Section VI.)

OWNERSHIP CHANGE TO - Client information is noted in Section II.

OWNERSHIP CHANGE FROM (previous owner information)

Name			
Employer ID# (EIN) or SSN			
Mailing Address Line 1			
Mailing Address Line 2			
Address Last Line - City		**State**	**ZIP+4**
Previous Facility ID#			

DATE OF SALE/TRANSFER	

SIGNATURE & CERTIFICATION OF PREVIOUS OWNER

Previous owner's signature is not available. As required, the "new" owner has attached a deed of transfer or other proof of ownership to this application. ☐ **Yes** ☐ **No** ☐ **N/A**

I have reviewed this form for submission to the Department. I certify under penalty of law as provided in 18 PA. C.S.A. §4903 (relating to false swearing) and 18 PA. C.S.A. §4904 (relating to unsworn falsification to authorities), that I have the authority to sign this Section for the transfer of permit or registration for the storage tanks listed herein. Further, I certify that all information provided in Section V is true, accurate and complete to the best of my knowledge and belief.

Type or Print Previous Owner Name

Previous Owner Signature	**Title**	**Date**

Facility ID# 51-33620 Facility Name Phila Ref Point Breeze

VI. STORAGE DESCRIPTION

Type or print legibly each regulated storage tank at this facility under your ownership.
Status Codes: C-Currently in Use T-Temporarily Out of Use E-Exempt R-Removed P-Closed In Place
Type Codes: M-Manufactured F-Field Constructed

A. ABOVEGROUND TANKS. List all new tanks. If amending information, list only those tanks being amended. Copy this page if more lines are needed.

Tank#	Prev Status	New Status	Type	Install Date (Mo/Day/Yr)	Change of Status Date (Mo/Day/Yr)	Capacity (Gallons)	Substance Code (Currently or Last Stored)	CERCLA Name (If Hazardous Substance) Substance Name (If Other Petroleum Substance or Petroleum Based Mixture)	CAS# (If Hazardous Substance)	Exempt Reference Code
008A	T	R	F	1/1/1957	01/20/2021	449,400	Light Cycle Oill			
A										
A										
A										
A										
A										
A										
A										
A										
A										

B. UNDERGROUND TANKS. List all new tanks. If amending information, list only those tanks being amended. Copy this page if more lines are needed.

Tank#	Prev Status	New Status	Type	Install Date (Mo/Day/Yr)	Change of Status Date (Mo/Day/Yr)	Capacity (Gallons)	Substance Code (Currently or Last Stored)	CERCLA Name (If Hazardous Substance) Substance Name (If Other Petroleum Substance or Petroleum Based Mixture)	CAS# (If Hazardous Substance)	Exempt Reference Code

Facility ID# 51-33620 Facility Name Phila Ref Point Breeze

VII. ABOVEGROUND & UNDERGROUND NEW TANK INSTALLATION INFORMATION

The DEP Certified Installer should complete this section. New tanks listed in Section VI must also be listed in this Section. Write the Tank Number(s) and place an ☒ in the appropriate box for each component that was installed.

Tank Construction & Corrosion Protection (1)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
Tank Manufacturer:						
Model:						
A. Unprotected Steel (Single Wall)	☐	☐	☐	☐	☐	☐
B. Cathodically Protected Steel (Galvanic)	☐	☐	☐	☐	☐	☐
C. Cathodically Protected Steel (Impressed Current)	☐	☐	☐	☐	☐	☐
D. Unprotected Steel (Double Wall)	☐	☐	☐	☐	☐	☐
E. Fiberglass (Single Wall)	☐	☐	☐	☐	☐	☐
F. Fiberglass (Double Wall)	☐	☐	☐	☐	☐	☐
G. Steel w/Plastic or Fiberglass Jacket or Double Wall Act 100	☐	☐	☐	☐	☐	☐
H. Steel With FRP Coating (Act 100 or Equivalent)	☐	☐	☐	☐	☐	☐
I. Steel with Lined Interior	☐	☐	☐	☐	☐	☐
J. Concrete	☐	☐	☐	☐	☐	☐
O. Cathodically Protected Double Wall Steel (Galvanic)	☐	☐	☐	☐	☐	☐
P. Cathodically Protected Steel with Liner	☐	☐	☐	☐	☐	☐
Q. Double Bottom (ASTs Only)	☐	☐	☐	☐	☐	☐
R. Molded Plastic Form (ASTs Only)	☐	☐	☐	☐	☐	☐
S. Stainless Steel	☐	☐	☐	☐	☐	☐
T. Aluminum	☐	☐	☐	☐	☐	☐
U. Fire Protected Double Wall AST	☐	☐	☐	☐	☐	☐
V. Steel with Plastic or Fiberglass Jacket or Double Wall Act 100 with Anodes	☐	☐	☐	☐	☐	☐
W. Steel with FRP Coating (Act 100 or Equivalent) with Anodes	☐	☐	☐	☐	☐	☐
X. Molded Plastic Form (Double Wall) (AST's Only)	☐	☐	☐	☐	☐	☐

Facility ID# 51-33620 Facility Name Phila Ref Point Breeze

Underground Piping Construction & Corrosion Protection – Single/Inner Wall (28)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
Primary (Inner) Piping Manufacturer:						
Model:						
A. Bare Steel	☐	☐	☐	☐	☐	☐
B. Cathodically Protected Metallic	☐	☐	☐	☐	☐	☐
C. Copper	☐	☐	☐	☐	☐	☐
D. Fiberglass	☐	☐	☐	☐	☐	☐
E. Flexible (Non-Metallic)	☐	☐	☐	☐	☐	☐
G. No Dispensing Piping	☐	☐	☐	☐	☐	☐
99. Other: _____	☐	☐	☐	☐	☐	☐

Underground Piping Construction & Corrosion Protection – Outer Wall (29)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
Secondary (Outer) Piping Manufacturer:						
Model:						
A. Bare Steel	☐	☐	☐	☐	☐	☐
B. Cathodically Protected Metallic	☐	☐	☐	☐	☐	☐
D. Fiberglass	☐	☐	☐	☐	☐	☐
E. Flexible (Non-Metallic)	☐	☐	☐	☐	☐	☐
G. No Dispensing Piping	☐	☐	☐	☐	☐	☐
L. Poly-encased Stainless Steel	☐	☐	☐	☐	☐	☐
99. Other: _____	☐	☐	☐	☐	☐	☐

Facility ID# 51-33620 Facility Name Phila Ref Point Breeze

Aboveground Piping Construction & Corrosion Protection (3)	**Tank #**	**Tank #**	**Tank #**	**Tank #**	**Tank #**	**Tank #**
A. Carbon Steel	☐	☐	☐	☐	☐	☐
B. Cathodically Protected Metallic	☐	☐	☐	☐	☐	☐
C. Copper	☐	☐	☐	☐	☐	☐
D. Single Wall Fiberglass	☐	☐	☐	☐	☐	☐
E. Single Wall Flexible (Non-Metallic)	☐	☐	☐	☐	☐	☐
F. PVC	☐	☐	☐	☐	☐	☐
G. None	☐	☐	☐	☐	☐	☐
I. Double Wall - Metallic Primary	☐	☐	☐	☐	☐	☐
J. Double Wall - Rigid (FRP) Primary	☐	☐	☐	☐	☐	☐
K. Double Wall - Flexible Primary	☐	☐	☐	☐	☐	☐
L. Stainless Steel	☐	☐	☐	☐	☐	☐
99. Other: _____	☐	☐	☐	☐	☐	☐

Product Delivery System (4)	**Tank #**	**Tank #**	**Tank #**	**Tank #**	**Tank #**	**Tank #**
A. Suction: Check valve at pump	☐	☐	☐	☐	☐	☐
B. Suction: Check valve at tank	☐	☐	☐	☐	☐	☐
C. Pressure	☐	☐	☐	☐	☐	☐
D. Gravity fed	☐	☐	☐	☐	☐	☐
E. None	☐	☐	☐	☐	☐	☐

Spill Prevention (6)	**Tank #**	**Tank #**	**Tank #**	**Tank #**	**Tank #**	**Tank #**
S. Permanently installed and liquid tight (single-walled)	☐	☐	☐	☐	☐	☐
D. Permanently installed and liquid tight (double-walled)	☐	☐	☐	☐	☐	☐
N. None (AST only)	☐	☐	☐	☐	☐	☐
E. Fill in less than 25 gallons (exempt)	☐	☐	☐	☐	☐	☐

Facility ID# 51-33620 Facility Name Phila Ref Point Breeze

Overfill Prevention (7)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Overfill alarm	☐	☐	☐	☐	☐	☐
E. Fill in less than 25 gallons (exempt)	☐	☐	☐	☐	☐	☐
N. None (AST only)	☐	☐	☐	☐	☐	☐
S. Drop tube shutoff device	☐	☐	☐	☐	☐	☐
Y. Yes (AST only) Type: _____	☐	☐	☐	☐	☐	☐

Emergency Containment (16) ASTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No - Explain: _____	☐	☐	☐	☐	☐	☐
Y. Yes (includes double-walled tanks with required appurtenances)	☐	☐	☐	☐	☐	☐
V. Underground vault	☐	☐	☐	☐	☐	☐

Secondary Containment (17) Single Wall ASTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No - Explain: _____	☐	☐	☐	☐	☐	☐
Y. Yes	☐	☐	☐	☐	☐	☐
V. Underground vault	☐	☐	☐	☐	☐	☐

Stage I Vapor Recovery (19) USTs and ASTs when applicable	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Coaxial	☐	☐	☐	☐	☐	☐
B. 2 Point	☐	☐	☐	☐	☐	☐
N. None or incomplete	☐	☐	☐	☐	☐	☐

Facility ID# 51-33620 Facility Name Phila Ref Point Breeze

Tank-top Containment Sumps Present (Product Piping Only) (21) USTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. None – Explain: _____	☐	☐	☐	☐	☐	☐
S. At some penetrations and liquid tight – Explain: _____	☐	☐	☐	☐	☐	☐
A. At all penetrations and liquid tight	☐	☐	☐	☐	☐	☐

Under-dispenser Containment Present (22) USTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. None – Explain: _____	☐	☐	☐	☐	☐	☐
S. At some dispensers and liquid tight – Explain: _____	☐	☐	☐	☐	☐	☐
A. Under all dispensers and liquid tight	☐	☐	☐	☐	☐	☐

Line Leak Detector Shuts Off Pump (23) USTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No	☐	☐	☐	☐	☐	☐
Y. Yes	☐	☐	☐	☐	☐	☐

Tank Supplies Emergency Generator (25)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No	☐	☐	☐	☐	☐	☐
Y. Yes	☐	☐	☐	☐	☐	☐

Facility ID# 51-33620 Facility Name Phila Ref Point Breeze

VIII. ABOVEGROUND & UNDERGROUND TANK INFORMATION FOR PERMANENT CLOSURE

Write the Tank Number(s) and place an ☒ in the appropriate box for each tank that was removed or closed in place.

Items 2 & 3 below apply to large ASTs and all USTs	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
	008A					
1. Contamination suspected or observed and notification of contamination form was submitted to the appropriate DEP regional office.	☐	☐	☐	☐	☐	☐
2. Closure document submitted to the appropriate DEP regional office.	☒	☐	☐	☐	☐	☐
3. Closure document kept on file by owner.	☒	☐	☐	☐	☐	☐

IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. This registration is conditioned upon compliance with provisions of the Storage Tank and Spill Prevention Act of 1989, all applicable regulations, and with the requirements for obtaining and maintaining a permit required under this Act. I certify my responsibility for assuring the following permit requirements:

- Storage tank systems are in compliance with applicable administrative, technical and operational requirements as specified in Subchapter E for underground tanks or Subchapter F or G for aboveground tanks.
- Tank handling and inspection activities are performed by an individual possessing DEP certification in the appropriate category as required in Subchapters A and B.
- Underground storage tanks meet the applicable financial responsibility requirements of Subchapter H (relating to financial responsibility requirements).
- A Spill Prevention Response (SPR) Plan must be submitted to the appropriate DEP regional office for facilities that have aboveground storage tanks where the total capacity of all aboveground tanks is greater than 21,000 gallons.
- Other state and local permits required for operation of the tank system have been attained.

My signature represents to the Department that I own the storage tank(s) and am aware of the responsibilities and potential liabilities as an "owner" arising under the Storage Tank and Spill Prevention Act of 1989 and all applicable regulations. I am also advised that statements made on this registration is made subject to the penalties of 18 PA. C.S.A. Section 4904 relating to unsworn falsification to authorities.

Type or Print Owner Name Gary Bowman

Owner Signature	Title	Date
	President	1/21/21

Information & Invoices should be sent to:

- ☒ **Tank Owner Contact**
- ☒ **Site Contact**
- ☐ **Facility Operator**
- ☐ **Other Responsible Party Identified Below**

Organization Name or Registered Fictitious Name		Employer ID# (EIN)		Dun & Bradstreet ID#
Northstar Contracting Group, Inc.				
Individual Last Name	**First Name**	**MI**	**Suffix**	**SSN**
Bowman	Gary	P	Sr	
Additional Individual Last Name	**First Name**	**MI**	**Suffix**	**SSN**
Mailing Address Line 1	**Mailing Address Line 2**			
250 E. Adams Avenue				
Address Last Line – City		**State**	**ZIP+4**	**Country**
Philadelphia		PA	19124	USA
Contact Title			**Phone**	**Ext.**
President				
E-mail Address				
Gbowman@northtar.com				
Client to Site (Facility) Relationship				

X. INSTALLER / REMOVER CERTIFICATION

This section must be completed by the certified tank handler(s) who is responsible for the installation or removal from service of the aboveground and underground storage tank systems listed in Section VI. Tank modification activity must be submitted on a "Tank Modification Report" form.

SIGNATURE & CERTIFICATION OF INSTALLER(S) / REMOVER(S)

As the certified tank handler responsible for the tank handling activities in the category or categories listed, I certify that all tank handling activities were conducted in compliance with the design, installation and operation standards of the Storage Tank and Spill Prevention Act of 1989 and all applicable regulations. I also certify, under penalty of law as provided in 18 PA C.S.A. 4904 (relating to unsworn falsification to authorities), that the information provided therein is true, accurate and complete to the best of my knowledge and belief.

Tank#	Installer/Remover Name	Construction Standard	Individual Certification#	Certification Category	Company Certification#	Installer/Remover Signature	Date
008 A	Kristian Satterthwaite		5081	AFR	1557		

XI. INSPECTOR CERTIFICATION

This section must be completed by the DEP Certified Tank Inspector(s) who is responsible for verifying the installation standards for field constructed tanks and aboveground tanks greater than 21,000 gallons listed in Section VI. (Type or Print legibly) A DEP Certified Inspector may also be responsible for inspecting existing ASTs which are entering regulated service for the first time with no tank handling activities.

SIGNATURE & CERTIFICATION OF INSPECTOR(S)

As the certified tank inspector responsible for verifying tank handling activities and construction standards, I certify that the tank(s) listed below are constructed to appropriate industry standards and, if applicable, to manufacturer's specifications; that the tank(s) have been tested as required by industry standards; and that the tank(s) meet or exceed applicable design and operating standards; and are in compliance with the requirements of the Storage Tank and Spill Prevention Act of 1989, and all applicable regulations. I also certify under penalty of law as provided in 18 PA C.S.A. 4904 (relating to unsworn falsification to authorities), that the information provided herein is true, accurate and complete to the best of my knowledge and belief.

Tank#	Inspector Name	Construction Standard	Individual Certification#	Certification Category	Company Certification#	Inspector Signature	Date

XII. SITE SPECIFIC INSTALLATION PERMIT NUMBER

If a site-specific permit was required for a new tank installation, write the tank number(s) and permit number(s) in the appropriate box.

Site-Specific Installation Permit	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#

2630-PM-BECB0514 Rev. 6/2019
Form

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF ENVIRONMENTAL CLEANUP AND BROWNFIELDS

STORAGE TANKS REGISTRATION / PERMITTING APPLICATION FORM

Before completing this form, read the step-by-step instructions provided in this application package.

	DEP USE ONLY
	Client ID#
51-33620 Facility ID #	Site ID#
	Account #
	Auth ID#
Phila Ref Point Breeze Facility Name	APS ID#
	Master Auth ID#

I. PURPOSE OF SUBMITTAL

INITIAL (Applies to First-Time Facility Registration)

- ☐ Register Tanks(s) to be Used*
- ☐ Register Tank(s) to be Removed
- ☐ Register Tank(s) to be Temporarily Out of Use
- ☐ Register Tank(s) to be Closed in Place

AMENDED (Applies to Currently Registered Tank(s) or Existing Facility)

- ☐ Changed Owner Information
- ☐ Changed Facility Information
- ☐ Changed to Currently In Use Tank(s)*
- ☐ Changed to Temporarily Out of Use Tank(s)
- ☐ Changed Product
- ☐ Changed Contact Information
- ☐ Changed Facility Operator Information
- ☐ Added Tank(s) to Existing Facility*
- ☒ Changed to Permanently Closed Tank(s)/Removed
- ☐ Changed to Exempt Tank(s)

CHANGE OF OWNERSHIP

- ☐ Tanks Changed Ownership and Remain at Same Facility*

* **For Underground Storage Tanks (UST), attach the UST Operator Training Documentation Form (2630-PM-BECB0514a) and copies of the Class A and Class B operator training certificates.**

II. CURRENT OR NEW TANK OWNER / CLIENT INFORMATION

DEP Client ID#	Client Type/Code	Fee Kind (check one if applicable)		
298341		☐ Volunteer Fire Co/EMS Org	☐ State Govt	☐ Fed Govt

Organization Name or Registered Fictitious Name		Employer ID# (EIN)		Dun & Bradstreet ID#
Philadelphia Energy Solutions Refining and Marketing, LLC				
Individual Last Name	**First Name**	**MI**	**Suffix**	**SSN**
Bowman	Gary	P	Sr	
Additional Individual Last Name	**First Name**	**MI**	**Suffix**	**SSN**
Mailing Address Line 1	**Mailing Address Line 2**			
3144 W. Passyunk Ave				
Address Last Line – City	**State**	**ZIP+4**	**Country**	
Philadelphia	PA	19141-5299	USA	
Client Contact Last Name	**First Name**	**MI**	**Suffix**	
Bowman	Gary	P	Sr	
Client Contact Title		**Phone**	**Ext**	
President		610 636-4574		
E-mail Address			**FAX**	
Gbowman@northtar.com				

III. SITE INFORMATION

DEP Site ID# | Site Name

EPA ID# | Estimated Number of Employees to be Present at Site

Description of Site

County Name | Municipality | City ☐ | Boro ☐ | Twp ☐ | State

County Name | Municipality | City ☐ | Boro ☐ | Twp ☐ | State

Site Location Line 1 | Site Location Line 2

Site Location Last Line – City | State | ZIP+4

Detailed Written Directions to Site

Site Contact Last Name | First Name | MI | Suffix

Site Contact Title | Site Contact Firm

Mailing Address Line 1 | Mailing Address Line 2

Address Last Line – City | State | ZIP+4

Phone | Ext | FAX | E-mail Address

NAICS Codes (Two- & Three-Digit Codes – List All That Apply) | 6-Digit Code (Optional)

Site to Client Relationship

IIIa. PROPERTY OWNER INFORMATION

☐ Same as Tank Owner Identified in Section II. ☐ Different than Tank Owner Identified in Section II; identified below.

Organization Name or Registered Fictitious Name | Employer ID# (EIN) | Dun & Bradstreet ID#

Individual Last Name | First Name | MI | Suffix | SSN

Additional Individual Last Name | First Name | MI | Suffix | SSN

Mailing Address Line 1 | Mailing Address Line 2

Address Last Line – City | State | ZIP+4 | Country

Property Owner Contact Last Name | First Name | MI | Suffix

Property Owner Contact Title | Phone | Ext

E-mail Address | FAX

IV. FACILITY INFORMATION

DEP Storage Tank Facility ID#	Facility Name	Facility Kind

Facility Location Line 1 (if different than Site Location)	Facility Location Line 2

Facility Location Last Line - City	State	ZIP+4

Latitude/Longitude Point of Origin	Latitude			Longitude		
	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds

Horizontal Accuracy Measure	Feet	*--or--*	Meters
Horizontal Reference Datum Code	☐ North American Datum of 1927 ☐ North American Datum of 1983 ☐ World Geodetic System of 1984		
Horizontal Collection Method Code			
Reference Point Code			
Altitude	Feet	*--or--*	Meters
Altitude Datum Name	☐ The National Geodetic Vertical Datum of 1929 ☐ The North American Vertical Datum of 1988 (NAVD88)		
Altitude (Vertical) Location Datum Collection Method Code			
Geometric Type Code			
Data Collection Date			

Source Map Scale Number		Inch(es)	=	Feet
	--or--	Centimeter(s)	=	Meters

Flammable & Combustible Liquid Permit # (if applicable)
State or Municipality that Issued the Permit

FACILITY OPERATOR INFORMATION

☐ **Same as Owner Identified in Section II.** ☐ **Different than Owner Identified in Section II; identified below.**

DEP Client ID#	Client Type / Code

Organization Name or Registered Fictitious Name	Employer ID# (EIN)	Dun & Bradstreet ID#

Individual Last Name	First Name	MI	Suffix	SSN

Additional Individual Last Name	First Name	MI	Suffix	SSN

Mailing Address Line 1	Mailing Address Line 2

Address Last Line – City	State	ZIP+4	Country

Client Contact Last Name	First Name	MI	Suffix

Client Contact Title	Phone	Ext

E-mail Address	FAX

V. CHANGE OF OWNERSHIP INFORMATION

☐ **All Tanks Changed Ownership at the Facility**

☐ **Some Tanks Changed Ownership at the Facility** (List all applicable tank numbers in Section VI.)

OWNERSHIP CHANGE TO - Client information is noted in Section II.

OWNERSHIP CHANGE FROM (previous owner information)

Name			
Employer ID# (EIN) or SSN			
Mailing Address Line 1			
Mailing Address Line 2			
Address Last Line - City		**State**	**ZIP+4**
Previous Facility ID#			

DATE OF SALE/TRANSFER	

SIGNATURE & CERTIFICATION OF PREVIOUS OWNER

Previous owner's signature is not available. As required, the "new" owner has attached a deed of transfer or other proof of ownership to this application. ☐ **Yes** ☐ **No** ☐ **N/A**

I have reviewed this form for submission to the Department. I certify under penalty of law as provided in 18 PA. C.S.A. §4903 (relating to false swearing) and 18 PA. C.S.A. §4904 (relating to unsworn falsification to authorities), that I have the authority to sign this Section for the transfer of permit or registration for the storage tanks listed herein. Further, I certify that all information provided in Section V is true, accurate and complete to the best of my knowledge and belief.

Type or Print Previous Owner Name

Previous Owner Signature	**Title**	**Date**

Facility ID# 51-33620 Facility Name Phila Ref Point Breeze

VI. STORAGE DESCRIPTION

Type or print legibly each regulated storage tank at this facility under your ownership.
Status Codes: C-Currently in Use T-Temporarily Out of Use E-Exempt R-Removed P-Closed In Place
Type Codes: M-Manufactured F-Field Constructed

A. ABOVEGROUND TANKS. List all new tanks. If amending information, list only those tanks being amended. Copy this page if more lines are needed.

Tank#	Prev Status	New Status	Type	Install Date (Mo/Day/Yr)	Change of Status Date (Mo/Day/Yr)	Capacity (Gallons)	Substance Code (Currently or Last Stored)	CERCLA Name (If Hazardous Substance) Substance Name (If Other Petroleum Substance or Petroleum Based Mixture)	CAS# (If Hazardous Substance)	Exempt Reference Code
043A	T	R	F	1/1/1954	01/19/2021	2,818,200	Heavy Gas Oill			
A										
A										
A										
A										
A										
A										
A										
A										
A										

B. UNDERGROUND TANKS. List all new tanks. If amending information, list only those tanks being amended. Copy this page if more lines are needed.

Tank#	Prev Status	New Status	Type	Install Date (Mo/Day/Yr)	Change of Status Date (Mo/Day/Yr)	Capacity (Gallons)	Substance Code (Currently or Last Stored)	CERCLA Name (If Hazardous Substance) Substance Name (If Other Petroleum Substance or Petroleum Based Mixture)	CAS# (If Hazardous Substance)	Exempt Reference Code

Facility ID# 51-33620 Facility Name Phila Ref Point Breeze

VII. ABOVEGROUND & UNDERGROUND NEW TANK INSTALLATION INFORMATION

The DEP Certified Installer should complete this section. New tanks listed in Section VI must also be listed in this Section. Write the Tank Number(s) and place an ☒ in the appropriate box for each component that was installed.

Tank Construction & Corrosion Protection (1)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
Tank Manufacturer:						
Model:						
A. Unprotected Steel (Single Wall)	☐	☐	☐	☐	☐	☐
B. Cathodically Protected Steel (Galvanic)	☐	☐	☐	☐	☐	☐
C. Cathodically Protected Steel (Impressed Current)	☐	☐	☐	☐	☐	☐
D. Unprotected Steel (Double Wall)	☐	☐	☐	☐	☐	☐
E. Fiberglass (Single Wall)	☐	☐	☐	☐	☐	☐
F. Fiberglass (Double Wall)	☐	☐	☐	☐	☐	☐
G. Steel w/Plastic or Fiberglass Jacket or Double Wall Act 100	☐	☐	☐	☐	☐	☐
H. Steel With FRP Coating (Act 100 or Equivalent)	☐	☐	☐	☐	☐	☐
I. Steel with Lined Interior	☐	☐	☐	☐	☐	☐
J. Concrete	☐	☐	☐	☐	☐	☐
O. Cathodically Protected Double Wall Steel (Galvanic)	☐	☐	☐	☐	☐	☐
P. Cathodically Protected Steel with Liner	☐	☐	☐	☐	☐	☐
Q. Double Bottom (ASTs Only)	☐	☐	☐	☐	☐	☐
R. Molded Plastic Form (ASTs Only)	☐	☐	☐	☐	☐	☐
S. Stainless Steel	☐	☐	☐	☐	☐	☐
T. Aluminum	☐	☐	☐	☐	☐	☐
U. Fire Protected Double Wall AST	☐	☐	☐	☐	☐	☐
V. Steel with Plastic or Fiberglass Jacket or Double Wall Act 100 with Anodes	☐	☐	☐	☐	☐	☐
W. Steel with FRP Coating (Act 100 or Equivalent) with Anodes	☐	☐	☐	☐	☐	☐
X. Molded Plastic Form (Double Wall) (AST's Only)	☐	☐	☐	☐	☐	☐

Facility ID# 51-33620 Facility Name Phila Ref Point Breeze

Underground Piping Construction & Corrosion Protection – Single/Inner Wall (28)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
Primary (Inner) Piping Manufacturer:						
Model:						
A. Bare Steel	☐	☐	☐	☐	☐	☐
B. Cathodically Protected Metallic	☐	☐	☐	☐	☐	☐
C. Copper	☐	☐	☐	☐	☐	☐
D. Fiberglass	☐	☐	☐	☐	☐	☐
E. Flexible (Non-Metallic)	☐	☐	☐	☐	☐	☐
G. No Dispensing Piping	☐	☐	☐	☐	☐	☐
99. Other: _____	☐	☐	☐	☐	☐	☐

Underground Piping Construction & Corrosion Protection – Outer Wall (29)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
Secondary (Outer) Piping Manufacturer:						
Model:						
A. Bare Steel	☐	☐	☐	☐	☐	☐
B. Cathodically Protected Metallic	☐	☐	☐	☐	☐	☐
D. Fiberglass	☐	☐	☐	☐	☐	☐
E. Flexible (Non-Metallic)	☐	☐	☐	☐	☐	☐
G. No Dispensing Piping	☐	☐	☐	☐	☐	☐
L. Poly-encased Stainless Steel	☐	☐	☐	☐	☐	☐
99. Other: _____	☐	☐	☐	☐	☐	☐

Facility ID# 51-33620 Facility Name Phila Ref Point Breeze

Aboveground Piping Construction & Corrosion Protection (3)	**Tank #**	**Tank #**	**Tank #**	**Tank #**	**Tank #**	**Tank #**
A. Carbon Steel	☐	☐	☐	☐	☐	☐
B. Cathodically Protected Metallic	☐	☐	☐	☐	☐	☐
C. Copper	☐	☐	☐	☐	☐	☐
D. Single Wall Fiberglass	☐	☐	☐	☐	☐	☐
E. Single Wall Flexible (Non-Metallic)	☐	☐	☐	☐	☐	☐
F. PVC	☐	☐	☐	☐	☐	☐
G. None	☐	☐	☐	☐	☐	☐
I. Double Wall - Metallic Primary	☐	☐	☐	☐	☐	☐
J. Double Wall - Rigid (FRP) Primary	☐	☐	☐	☐	☐	☐
K. Double Wall - Flexible Primary	☐	☐	☐	☐	☐	☐
L. Stainless Steel	☐	☐	☐	☐	☐	☐
99. Other: _____	☐	☐	☐	☐	☐	☐

Product Delivery System (4)	**Tank #**	**Tank #**	**Tank #**	**Tank #**	**Tank #**	**Tank #**
A. Suction: Check valve at pump	☐	☐	☐	☐	☐	☐
B. Suction: Check valve at tank	☐	☐	☐	☐	☐	☐
C. Pressure	☐	☐	☐	☐	☐	☐
D. Gravity fed	☐	☐	☐	☐	☐	☐
E. None	☐	☐	☐	☐	☐	☐

Spill Prevention (6)	**Tank #**	**Tank #**	**Tank #**	**Tank #**	**Tank #**	**Tank #**
S. Permanently installed and liquid tight (single-walled)	☐	☐	☐	☐	☐	☐
D. Permanently installed and liquid tight (double-walled)	☐	☐	☐	☐	☐	☐
N. None (AST only)	☐	☐	☐	☐	☐	☐
E. Fill in less than 25 gallons (exempt)	☐	☐	☐	☐	☐	☐

Facility ID# 51-33620 Facility Name Phila Ref Point Breeze

Overfill Prevention (7)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Overfill alarm	☐	☐	☐	☐	☐	☐
E. Fill in less than 25 gallons (exempt)	☐	☐	☐	☐	☐	☐
N. None (AST only)	☐	☐	☐	☐	☐	☐
S. Drop tube shutoff device	☐	☐	☐	☐	☐	☐
Y. Yes (AST only) Type: _____	☐	☐	☐	☐	☐	☐

Emergency Containment (16) ASTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No - Explain: _____	☐	☐	☐	☐	☐	☐
Y. Yes (includes double-walled tanks with required appurtenances)	☐	☐	☐	☐	☐	☐
V. Underground vault	☐	☐	☐	☐	☐	☐

Secondary Containment (17) Single Wall ASTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No - Explain: _____	☐	☐	☐	☐	☐	☐
Y. Yes	☐	☐	☐	☐	☐	☐
V. Underground vault	☐	☐	☐	☐	☐	☐

Stage I Vapor Recovery (19) USTs and ASTs when applicable	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Coaxial	☐	☐	☐	☐	☐	☐
B. 2 Point	☐	☐	☐	☐	☐	☐
N. None or incomplete	☐	☐	☐	☐	☐	☐

Facility ID# 51-33620 Facility Name Phila Ref Point Breeze

Tank-top Containment Sumps Present (Product Piping Only) (21) USTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. None – Explain: _____	☐	☐	☐	☐	☐	☐
S. At some penetrations and liquid tight – Explain: _____	☐	☐	☐	☐	☐	☐
A. At all penetrations and liquid tight	☐	☐	☐	☐	☐	☐

Under-dispenser Containment Present (22) USTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. None – Explain: _____	☐	☐	☐	☐	☐	☐
S. At some dispensers and liquid tight – Explain: _____	☐	☐	☐	☐	☐	☐
A. Under all dispensers and liquid tight	☐	☐	☐	☐	☐	☐

Line Leak Detector Shuts Off Pump (23) USTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No	☐	☐	☐	☐	☐	☐
Y. Yes	☐	☐	☐	☐	☐	☐

Tank Supplies Emergency Generator (25)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No	☐	☐	☐	☐	☐	☐
Y. Yes	☐	☐	☐	☐	☐	☐

Facility ID# 51-33620 Facility Name Phila Ref Point Breeze

VIII. ABOVEGROUND & UNDERGROUND TANK INFORMATION FOR PERMANENT CLOSURE

Write the Tank Number(s) and place an ☒ in the appropriate box for each tank that was removed or closed in place.

Items 2 & 3 below apply to large ASTs and all USTs	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
	043A					
1. Contamination suspected or observed and notification of contamination form was submitted to the appropriate DEP regional office.	☐	☐	☐	☐	☐	☐
2. Closure document submitted to the appropriate DEP regional office.	☒	☐	☐	☐	☐	☐
3. Closure document kept on file by owner.	☒	☐	☐	☐	☐	☐

IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. This registration is conditioned upon compliance with provisions of the Storage Tank and Spill Prevention Act of 1989, all applicable regulations, and with the requirements for obtaining and maintaining a permit required under this Act. I certify my responsibility for assuring the following permit requirements:

- Storage tank systems are in compliance with applicable administrative, technical and operational requirements as specified in Subchapter E for underground tanks or Subchapter F or G for aboveground tanks.
- Tank handling and inspection activities are performed by an individual possessing DEP certification in the appropriate category as required in Subchapters A and B.
- Underground storage tanks meet the applicable financial responsibility requirements of Subchapter H (relating to financial responsibility requirements).
- A Spill Prevention Response (SPR) Plan must be submitted to the appropriate DEP regional office for facilities that have aboveground storage tanks where the total capacity of all aboveground tanks is greater than 21,000 gallons.
- Other state and local permits required for operation of the tank system have been attained.

My signature represents to the Department that I own the storage tank(s) and am aware of the responsibilities and potential liabilities as an "owner" arising under the Storage Tank and Spill Prevention Act of 1989 and all applicable regulations. I am also advised that statements made on this registration is made subject to the penalties of 18 PA. C.S.A. Section 4904 relating to unsworn falsification to authorities.

Type or Print Owner Name Gary Bowman

Owner Signature	Title	Date
	President	1/20/21

Information & Invoices should be sent to:

- ☒ **Tank Owner Contact**
- ☒ **Site Contact**
- ☐ **Facility Operator**
- ☐ **Other Responsible Party Identified Below**

Organization Name or Registered Fictitious Name		Employer ID# (EIN)		Dun & Bradstreet ID#
Northstar Contracting Group, Inc.				
Individual Last Name	**First Name**	**MI**	**Suffix**	**SSN**
Bowman	Gary	P	Sr	
Additional Individual Last Name	**First Name**	**MI**	**Suffix**	**SSN**
Mailing Address Line 1	**Mailing Address Line 2**			
250 E. Adams Avenue				
Address Last Line – City		**State**	**ZIP+4**	**Country**
Philadelphia		PA	19124	USA
Contact Title			**Phone**	**Ext.**
President				
E-mail Address				
Gbowman@northtar.com				
Client to Site (Facility) Relationship				

X. INSTALLER / REMOVER CERTIFICATION

This section must be completed by the certified tank handler(s) who is responsible for the installation or removal from service of the aboveground and underground storage tank systems listed in Section VI. Tank modification activity must be submitted on a "Tank Modification Report" form.

SIGNATURE & CERTIFICATION OF INSTALLER(S) / REMOVER(S)

As the certified tank handler responsible for the tank handling activities in the category or categories listed, I certify that all tank handling activities were conducted in compliance with the design, installation and operation standards of the Storage Tank and Spill Prevention Act of 1989 and all applicable regulations. I also certify, under penalty of law as provided in 18 PA C.S.A. 4904 (relating to unsworn falsification to authorities), that the information provided therein is true, accurate and complete to the best of my knowledge and belief.

Tank#	Installer/Remover Name	Construction Standard	Individual Certification#	Certification Category	Company Certification#	Installer/Remover Signature	Date
043 A	Kristian Satterthwaite		5081	AFR	1557		

XI. INSPECTOR CERTIFICATION

This section must be completed by the DEP Certified Tank Inspector(s) who is responsible for verifying the installation standards for field constructed tanks and aboveground tanks greater than 21,000 gallons listed in Section VI. (Type or Print legibly) A DEP Certified Inspector may also be responsible for inspecting existing ASTs which are entering regulated service for the first time with no tank handling activities.

SIGNATURE & CERTIFICATION OF INSPECTOR(S)

As the certified tank inspector responsible for verifying tank handling activities and construction standards, I certify that the tank(s) listed below are constructed to appropriate industry standards and, if applicable, to manufacturer's specifications; that the tank(s) have been tested as required by industry standards; and that the tank(s) meet or exceed applicable design and operating standards; and are in compliance with the requirements of the Storage Tank and Spill Prevention Act of 1989, and all applicable regulations. I also certify under penalty of law as provided in 18 PA C.S.A. 4904 (relating to unsworn falsification to authorities), that the information provided herein is true, accurate and complete to the best of my knowledge and belief.

Tank#	Inspector Name	Construction Standard	Individual Certification#	Certification Category	Company Certification#	Inspector Signature	Date

XII. SITE SPECIFIC INSTALLATION PERMIT NUMBER

If a site-specific permit was required for a new tank installation, write the tank number(s) and permit number(s) in the appropriate box.

Site-Specific Installation Permit	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#

2630-PM-BECB0514 Rev. 6/2019
Form

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF ENVIRONMENTAL CLEANUP AND BROWNFIELDS

STORAGE TANKS REGISTRATION / PERMITTING APPLICATION FORM

Before completing this form, read the step-by-step instructions provided in this application package.

	DEP USE ONLY
	Client ID#
51-33620 Facility ID #	Site ID#
	Account #
	Auth ID#
Phila Ref Point Breeze Facility Name	APS ID#
	Master Auth ID#

I. PURPOSE OF SUBMITTAL

INITIAL (Applies to First-Time Facility Registration)

- ☐ Register Tanks(s) to be Used*
- ☐ Register Tank(s) to be Removed
- ☐ Register Tank(s) to be Temporarily Out of Use
- ☐ Register Tank(s) to be Closed in Place

AMENDED (Applies to Currently Registered Tank(s) or Existing Facility)

- ☐ Changed Owner Information
- ☐ Changed Facility Information
- ☐ Changed to Currently In Use Tank(s)*
- ☐ Changed to Temporarily Out of Use Tank(s)
- ☐ Changed Product
- ☐ Changed Contact Information
- ☐ Changed Facility Operator Information
- ☐ Added Tank(s) to Existing Facility*
- ☒ Changed to Permanently Closed Tank(s)/Removed
- ☐ Changed to Exempt Tank(s)

CHANGE OF OWNERSHIP

- ☐ Tanks Changed Ownership and Remain at Same Facility*

* **For Underground Storage Tanks (UST), attach the UST Operator Training Documentation Form (2630-PM-BECB0514a) and copies of the Class A and Class B operator training certificates.**

II. CURRENT OR NEW TANK OWNER / CLIENT INFORMATION

DEP Client ID#	Client Type/Code	Fee Kind (check one if applicable)		
298341		☐ Volunteer Fire Co/EMS Org	☐ State Govt	☐ Fed Govt

Organization Name or Registered Fictitious Name		Employer ID# (EIN)		Dun & Bradstreet ID#
Philadelphia Energy Solutions Refining and Marketing, LLC				
Individual Last Name	**First Name**	**MI**	**Suffix**	**SSN**
Bowman	Gary	P	Sr	
Additional Individual Last Name	**First Name**	**MI**	**Suffix**	**SSN**
Mailing Address Line 1	**Mailing Address Line 2**			
3144 W. Passyunk Ave				
Address Last Line – City	**State**	**ZIP+4**	**Country**	
Philadelphia	PA	19141-5299	USA	
Client Contact Last Name	**First Name**	**MI**	**Suffix**	
Bowman	Gary	P	Sr	
Client Contact Title		**Phone**	**Ext**	
President		610 636-4574		
E-mail Address			**FAX**	
Gbowman@northtar.com				

III. SITE INFORMATION

DEP Site ID# | Site Name

EPA ID# | Estimated Number of Employees to be Present at Site

Description of Site

County Name | Municipality | City ☐ | Boro ☐ | Twp ☐ | State

County Name | Municipality | City ☐ | Boro ☐ | Twp ☐ | State

Site Location Line 1 | Site Location Line 2

Site Location Last Line – City | State | ZIP+4

Detailed Written Directions to Site

Site Contact Last Name | First Name | MI | Suffix

Site Contact Title | Site Contact Firm

Mailing Address Line 1 | Mailing Address Line 2

Address Last Line – City | State | ZIP+4

Phone | Ext | FAX | E-mail Address

NAICS Codes (Two- & Three-Digit Codes – List All That Apply) | 6-Digit Code (Optional)

Site to Client Relationship

IIIa. PROPERTY OWNER INFORMATION

☐ Same as Tank Owner Identified in Section II. ☐ Different than Tank Owner Identified in Section II; identified below.

Organization Name or Registered Fictitious Name | Employer ID# (EIN) | Dun & Bradstreet ID#

Individual Last Name | First Name | MI | Suffix | SSN

Additional Individual Last Name | First Name | MI | Suffix | SSN

Mailing Address Line 1 | Mailing Address Line 2

Address Last Line – City | State | ZIP+4 | Country

Property Owner Contact Last Name | First Name | MI | Suffix

Property Owner Contact Title | Phone | Ext

E-mail Address | FAX

IV. FACILITY INFORMATION

DEP Storage Tank Facility ID# | **Facility Name** | **Facility Kind**

Facility Location Line 1 (if different than Site Location) | **Facility Location Line 2**

Facility Location Last Line - City | **State** | **ZIP+4**

Latitude/Longitude Point of Origin	Latitude			Longitude		
	Degrees	**Minutes**	**Seconds**	**Degrees**	**Minutes**	**Seconds**

Horizontal Accuracy Measure Feet --*or*-- Meters

Horizontal Reference Datum Code
- ☐ North American Datum of 1927
- ☐ North American Datum of 1983
- ☐ World Geodetic System of 1984

Horizontal Collection Method Code

Reference Point Code

Altitude Feet --*or*-- Meters

Altitude Datum Name
- ☐ The National Geodetic Vertical Datum of 1929
- ☐ The North American Vertical Datum of 1988 (NAVD88)

Altitude (Vertical) Location Datum Collection Method Code

Geometric Type Code

Data Collection Date

Source Map Scale Number Inch(es) = Feet

--*or*-- Centimeter(s) = Meters

Flammable & Combustible Liquid Permit # (if applicable)

State or Municipality that Issued the Permit

FACILITY OPERATOR INFORMATION

☐ **Same as Owner Identified in Section II.** ☐ **Different than Owner Identified in Section II; identified below.**

DEP Client ID# | **Client Type / Code**

Organization Name or Registered Fictitious Name | **Employer ID# (EIN)** | **Dun & Bradstreet ID#**

Individual Last Name | **First Name** | **MI** | **Suffix** | **SSN**

Additional Individual Last Name | **First Name** | **MI** | **Suffix** | **SSN**

Mailing Address Line 1 | **Mailing Address Line 2**

Address Last Line – City | **State** | **ZIP+4** | **Country**

Client Contact Last Name | **First Name** | **MI** | **Suffix**

Client Contact Title | **Phone** | **Ext**

E-mail Address | **FAX**

V. CHANGE OF OWNERSHIP INFORMATION

☐ **All Tanks Changed Ownership at the Facility**

☐ **Some Tanks Changed Ownership at the Facility** (List all applicable tank numbers in Section VI.)

OWNERSHIP CHANGE TO - Client information is noted in Section II.

OWNERSHIP CHANGE FROM (previous owner information)

Name			
Employer ID# (EIN) or SSN			
Mailing Address Line 1			
Mailing Address Line 2			
Address Last Line - City		**State**	**ZIP+4**
Previous Facility ID#			

DATE OF SALE/TRANSFER	

SIGNATURE & CERTIFICATION OF PREVIOUS OWNER

Previous owner's signature is not available. As required, the "new" owner has attached a deed of transfer or other proof of ownership to this application. ☐ **Yes** ☐ **No** ☐ **N/A**

I have reviewed this form for submission to the Department. I certify under penalty of law as provided in 18 PA. C.S.A. §4903 (relating to false swearing) and 18 PA. C.S.A. §4904 (relating to unsworn falsification to authorities), that I have the authority to sign this Section for the transfer of permit or registration for the storage tanks listed herein. Further, I certify that all information provided in Section V is true, accurate and complete to the best of my knowledge and belief.

Type or Print Previous Owner Name

Previous Owner Signature	**Title**	**Date**

Facility ID# 51-33620 Facility Name Phila Ref Point Breeze

VI. STORAGE DESCRIPTION

Type or print legibly each regulated storage tank at this facility under your ownership.
Status Codes: C-Currently in Use T-Temporarily Out of Use E-Exempt R-Removed P-Closed In Place
Type Codes: M-Manufactured F-Field Constructed

A. ABOVEGROUND TANKS. List all new tanks. If amending information, list only those tanks being amended. Copy this page if more lines are needed.

Tank#	Prev Status	New Status	Type	Install Date (Mo/Day/Yr)	Change of Status Date (Mo/Day/Yr)	Capacity (Gallons)	Substance Code (Currently or Last Stored)	CERCLA Name (If Hazardous Substance) Substance Name (If Other Petroleum Substance or Petroleum Based Mixture)	CAS# (If Hazardous Substance)	Exempt Reference Code
044A	T	R	F	1/1/1957	01/27/2021	2,818,200	Vacuum Gas Oil			
A										
A										
A										
A										
A										
A										
A										
A										
A										

B. UNDERGROUND TANKS. List all new tanks. If amending information, list only those tanks being amended. Copy this page if more lines are needed.

Tank#	Prev Status	New Status	Type	Install Date (Mo/Day/Yr)	Change of Status Date (Mo/Day/Yr)	Capacity (Gallons)	Substance Code (Currently or Last Stored)	CERCLA Name (If Hazardous Substance) Substance Name (If Other Petroleum Substance or Petroleum Based Mixture)	CAS# (If Hazardous Substance)	Exempt Reference Code

Facility ID# 51-33620 Facility Name Phila Ref Point Breeze

VII. ABOVEGROUND & UNDERGROUND NEW TANK INSTALLATION INFORMATION

The DEP Certified Installer should complete this section. New tanks listed in Section VI must also be listed in this Section. Write the Tank Number(s) and place an ☒ in the appropriate box for each component that was installed.

Tank Construction & Corrosion Protection (1)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
Tank Manufacturer:						
Model:						
A. Unprotected Steel (Single Wall)	☐	☐	☐	☐	☐	☐
B. Cathodically Protected Steel (Galvanic)	☐	☐	☐	☐	☐	☐
C. Cathodically Protected Steel (Impressed Current)	☐	☐	☐	☐	☐	☐
D. Unprotected Steel (Double Wall)	☐	☐	☐	☐	☐	☐
E. Fiberglass (Single Wall)	☐	☐	☐	☐	☐	☐
F. Fiberglass (Double Wall)	☐	☐	☐	☐	☐	☐
G. Steel w/Plastic or Fiberglass Jacket or Double Wall Act 100	☐	☐	☐	☐	☐	☐
H. Steel With FRP Coating (Act 100 or Equivalent)	☐	☐	☐	☐	☐	☐
I. Steel with Lined Interior	☐	☐	☐	☐	☐	☐
J. Concrete	☐	☐	☐	☐	☐	☐
O. Cathodically Protected Double Wall Steel (Galvanic)	☐	☐	☐	☐	☐	☐
P. Cathodically Protected Steel with Liner	☐	☐	☐	☐	☐	☐
Q. Double Bottom (ASTs Only)	☐	☐	☐	☐	☐	☐
R. Molded Plastic Form (ASTs Only)	☐	☐	☐	☐	☐	☐
S. Stainless Steel	☐	☐	☐	☐	☐	☐
T. Aluminum	☐	☐	☐	☐	☐	☐
U. Fire Protected Double Wall AST	☐	☐	☐	☐	☐	☐
V. Steel with Plastic or Fiberglass Jacket or Double Wall Act 100 with Anodes	☐	☐	☐	☐	☐	☐
W. Steel with FRP Coating (Act 100 or Equivalent) with Anodes	☐	☐	☐	☐	☐	☐
X. Molded Plastic Form (Double Wall) (AST's Only)	☐	☐	☐	☐	☐	☐

Facility ID# 51-33620 Facility Name Phila Ref Point Breeze

Underground Piping Construction & Corrosion Protection – Single/Inner Wall (28)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
Primary (Inner) Piping Manufacturer:						
Model:						
A. Bare Steel	☐	☐	☐	☐	☐	☐
B. Cathodically Protected Metallic	☐	☐	☐	☐	☐	☐
C. Copper	☐	☐	☐	☐	☐	☐
D. Fiberglass	☐	☐	☐	☐	☐	☐
E. Flexible (Non-Metallic)	☐	☐	☐	☐	☐	☐
G. No Dispensing Piping	☐	☐	☐	☐	☐	☐
99. Other: _____	☐	☐	☐	☐	☐	☐

Underground Piping Construction & Corrosion Protection – Outer Wall (29)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
Secondary (Outer) Piping Manufacturer:						
Model:						
A. Bare Steel	☐	☐	☐	☐	☐	☐
B. Cathodically Protected Metallic	☐	☐	☐	☐	☐	☐
D. Fiberglass	☐	☐	☐	☐	☐	☐
E. Flexible (Non-Metallic)	☐	☐	☐	☐	☐	☐
G. No Dispensing Piping	☐	☐	☐	☐	☐	☐
L. Poly-encased Stainless Steel	☐	☐	☐	☐	☐	☐
99. Other: _____	☐	☐	☐	☐	☐	☐

Facility ID# 51-33620 Facility Name Phila Ref Point Breeze

Aboveground Piping Construction & Corrosion Protection (3)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Carbon Steel	☐	☐	☐	☐	☐	☐
B. Cathodically Protected Metallic	☐	☐	☐	☐	☐	☐
C. Copper	☐	☐	☐	☐	☐	☐
D. Single Wall Fiberglass	☐	☐	☐	☐	☐	☐
E. Single Wall Flexible (Non-Metallic)	☐	☐	☐	☐	☐	☐
F. PVC	☐	☐	☐	☐	☐	☐
G. None	☐	☐	☐	☐	☐	☐
I. Double Wall - Metallic Primary	☐	☐	☐	☐	☐	☐
J. Double Wall - Rigid (FRP) Primary	☐	☐	☐	☐	☐	☐
K. Double Wall - Flexible Primary	☐	☐	☐	☐	☐	☐
L. Stainless Steel	☐	☐	☐	☐	☐	☐
99. Other: _____	☐	☐	☐	☐	☐	☐

Product Delivery System (4)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Suction: Check valve at pump	☐	☐	☐	☐	☐	☐
B. Suction: Check valve at tank	☐	☐	☐	☐	☐	☐
C. Pressure	☐	☐	☐	☐	☐	☐
D. Gravity fed	☐	☐	☐	☐	☐	☐
E. None	☐	☐	☐	☐	☐	☐

Spill Prevention (6)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
S. Permanently installed and liquid tight (single-walled)	☐	☐	☐	☐	☐	☐
D. Permanently installed and liquid tight (double-walled)	☐	☐	☐	☐	☐	☐
N. None (AST only)	☐	☐	☐	☐	☐	☐
E. Fill in less than 25 gallons (exempt)	☐	☐	☐	☐	☐	☐

Facility ID# 51-33620 Facility Name Phila Ref Point Breeze

Overfill Prevention (7)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Overfill alarm	☐	☐	☐	☐	☐	☐
E. Fill in less than 25 gallons (exempt)	☐	☐	☐	☐	☐	☐
N. None (AST only)	☐	☐	☐	☐	☐	☐
S. Drop tube shutoff device	☐	☐	☐	☐	☐	☐
Y. Yes (AST only) Type: _____	☐	☐	☐	☐	☐	☐

Emergency Containment (16) ASTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No - Explain: _____	☐	☐	☐	☐	☐	☐
Y. Yes (includes double-walled tanks with required appurtenances)	☐	☐	☐	☐	☐	☐
V. Underground vault	☐	☐	☐	☐	☐	☐

Secondary Containment (17) Single Wall ASTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No - Explain: _____	☐	☐	☐	☐	☐	☐
Y. Yes	☐	☐	☐	☐	☐	☐
V. Underground vault	☐	☐	☐	☐	☐	☐

Stage I Vapor Recovery (19) USTs and ASTs when applicable	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Coaxial	☐	☐	☐	☐	☐	☐
B. 2 Point	☐	☐	☐	☐	☐	☐
N. None or incomplete	☐	☐	☐	☐	☐	☐

Facility ID# 51-33620 Facility Name Phila Ref Point Breeze

Tank-top Containment Sumps Present (Product Piping Only) (21) USTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. None – Explain: _____	☐	☐	☐	☐	☐	☐
S. At some penetrations and liquid tight – Explain: _____	☐	☐	☐	☐	☐	☐
A. At all penetrations and liquid tight	☐	☐	☐	☐	☐	☐

Under-dispenser Containment Present (22) USTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. None – Explain: _____	☐	☐	☐	☐	☐	☐
S. At some dispensers and liquid tight – Explain: _____	☐	☐	☐	☐	☐	☐
A. Under all dispensers and liquid tight	☐	☐	☐	☐	☐	☐

Line Leak Detector Shuts Off Pump (23) USTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No	☐	☐	☐	☐	☐	☐
Y. Yes	☐	☐	☐	☐	☐	☐

Tank Supplies Emergency Generator (25)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No	☐	☐	☐	☐	☐	☐
Y. Yes	☐	☐	☐	☐	☐	☐

Facility ID# 51-33620 Facility Name Phila Ref Point Breeze

VIII. ABOVEGROUND & UNDERGROUND TANK INFORMATION FOR PERMANENT CLOSURE

Write the Tank Number(s) and place an ☒ in the appropriate box for each tank that was removed or closed in place.

Items 2 & 3 below apply to large ASTs and all USTs	**Tank #**	**Tank #**	**Tank #**	**Tank #**	**Tank #**	**Tank #**
	044A					
1. Contamination suspected or observed and notification of contamination form was submitted to the appropriate DEP regional office.	☐	☐	☐	☐	☐	☐
2. Closure document submitted to the appropriate DEP regional office.	☒	☐	☐	☐	☐	☐
3. Closure document kept on file by owner.	☒	☐	☐	☐	☐	☐

IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. This registration is conditioned upon compliance with provisions of the Storage Tank and Spill Prevention Act of 1989, all applicable regulations, and with the requirements for obtaining and maintaining a permit required under this Act. I certify my responsibility for assuring the following permit requirements:

- Storage tank systems are in compliance with applicable administrative, technical and operational requirements as specified in Subchapter E for underground tanks or Subchapter F or G for aboveground tanks.
- Tank handling and inspection activities are performed by an individual possessing DEP certification in the appropriate category as required in Subchapters A and B.
- Underground storage tanks meet the applicable financial responsibility requirements of Subchapter H (relating to financial responsibility requirements).
- A Spill Prevention Response (SPR) Plan must be submitted to the appropriate DEP regional office for facilities that have aboveground storage tanks where the total capacity of all aboveground tanks is greater than 21,000 gallons.
- Other state and local permits required for operation of the tank system have been attained.

My signature represents to the Department that I own the storage tank(s) and am aware of the responsibilities and potential liabilities as an "owner" arising under the Storage Tank and Spill Prevention Act of 1989 and all applicable regulations. I am also advised that statements made on this registration is made subject to the penalties of 18 PA. C.S.A. Section 4904 relating to unsworn falsification to authorities.

Type or Print Owner Name Gary Bowman

Owner Signature	Title	Date
	President	1/27/2021

Information & Invoices should be sent to:

- ☒ **Tank Owner Contact**
- ☒ **Site Contact**
- ☐ **Facility Operator**
- ☐ **Other Responsible Party Identified Below**

Organization Name or Registered Fictitious Name		Employer ID# (EIN)		Dun & Bradstreet ID#
Northstar Contracting Group, Inc.				
Individual Last Name	**First Name**	**MI**	**Suffix**	**SSN**
Bowman	Gary	P	Sr	
Additional Individual Last Name	**First Name**	**MI**	**Suffix**	**SSN**
Mailing Address Line 1	**Mailing Address Line 2**			
250 E. Adams Avenue				
Address Last Line – City		**State**	**ZIP+4**	**Country**
Philadelphia		PA	19124	USA
Contact Title			**Phone**	**Ext.**
President				
E-mail Address				
Gbowman@northtar.com				
Client to Site (Facility) Relationship				

X. INSTALLER / REMOVER CERTIFICATION

This section must be completed by the certified tank handler(s) who is responsible for the installation or removal from service of the aboveground and underground storage tank systems listed in Section VI. Tank modification activity must be submitted on a "Tank Modification Report" form.

SIGNATURE & CERTIFICATION OF INSTALLER(S) / REMOVER(S)

As the certified tank handler responsible for the tank handling activities in the category or categories listed, I certify that all tank handling activities were conducted in compliance with the design, installation and operation standards of the Storage Tank and Spill Prevention Act of 1989 and all applicable regulations. I also certify, under penalty of law as provided in 18 PA C.S.A. 4904 (relating to unsworn falsification to authorities), that the information provided therein is true, accurate and complete to the best of my knowledge and belief.

Tank#	Installer/Remover Name	Construction Standard	Individual Certification#	Certification Category	Company Certification#	Installer/Remover Signature	Date
044 A	Kristian Satterthwaite		5081	AFR	1557		

XI. INSPECTOR CERTIFICATION

This section must be completed by the DEP Certified Tank Inspector(s) who is responsible for verifying the installation standards for field constructed tanks and aboveground tanks greater than 21,000 gallons listed in Section VI. (Type or Print legibly) A DEP Certified Inspector may also be responsible for inspecting existing ASTs which are entering regulated service for the first time with no tank handling activities.

SIGNATURE & CERTIFICATION OF INSPECTOR(S)

As the certified tank inspector responsible for verifying tank handling activities and construction standards, I certify that the tank(s) listed below are constructed to appropriate industry standards and, if applicable, to manufacturer's specifications; that the tank(s) have been tested as required by industry standards; and that the tank(s) meet or exceed applicable design and operating standards; and are in compliance with the requirements of the Storage Tank and Spill Prevention Act of 1989, and all applicable regulations. I also certify under penalty of law as provided in 18 PA C.S.A. 4904 (relating to unsworn falsification to authorities), that the information provided herein is true, accurate and complete to the best of my knowledge and belief.

Tank#	Inspector Name	Construction Standard	Individual Certification#	Certification Category	Company Certification#	Inspector Signature	Date

XII. SITE SPECIFIC INSTALLATION PERMIT NUMBER

If a site-specific permit was required for a new tank installation, write the tank number(s) and permit number(s) in the appropriate box.

Site-Specific Installation Permit	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#

2630-PM-BECB0514 Rev. 6/2019
Form

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF ENVIRONMENTAL CLEANUP AND BROWNFIELDS

STORAGE TANKS REGISTRATION / PERMITTING APPLICATION FORM

Before completing this form, read the step-by-step instructions provided in this application package.

	DEP USE ONLY
	Client ID#
51-33620 Facility ID #	Site ID#
	Account #
	Auth ID#
Phila Ref Point Breeze Facility Name	APS ID#
	Master Auth ID#

I. PURPOSE OF SUBMITTAL

INITIAL (Applies to First-Time Facility Registration)

- ☐ Register Tanks(s) to be Used*
- ☐ Register Tank(s) to be Removed
- ☐ Register Tank(s) to be Temporarily Out of Use
- ☐ Register Tank(s) to be Closed in Place

AMENDED (Applies to Currently Registered Tank(s) or Existing Facility)

- ☐ Changed Owner Information
- ☐ Changed Facility Information
- ☐ Changed to Currently In Use Tank(s)*
- ☐ Changed to Temporarily Out of Use Tank(s)
- ☐ Changed Product
- ☐ Changed Contact Information
- ☐ Changed Facility Operator Information
- ☐ Added Tank(s) to Existing Facility*
- ☒ Changed to Permanently Closed Tank(s)/Removed
- ☐ Changed to Exempt Tank(s)

CHANGE OF OWNERSHIP

- ☐ Tanks Changed Ownership and Remain at Same Facility*

* **For Underground Storage Tanks (UST), attach the UST Operator Training Documentation Form (2630-PM-BECB0514a) and copies of the Class A and Class B operator training certificates.**

II. CURRENT OR NEW TANK OWNER / CLIENT INFORMATION

DEP Client ID#	Client Type/Code	Fee Kind (check one if applicable)
298341		☐ Volunteer Fire Co/EMS Org ☐ State Govt ☐ Fed Govt

Organization Name or Registered Fictitious Name	Employer ID# (EIN)	Dun & Bradstreet ID#
Philadelphia Energy Solutions Refining and Marketing, LLC		

Individual Last Name	First Name	MI	Suffix	SSN
Bowman	Gary	P	Sr	

Additional Individual Last Name	First Name	MI	Suffix	SSN

Mailing Address Line 1	Mailing Address Line 2
3144 W. Passyunk Ave	

Address Last Line – City	State	ZIP+4	Country
Philadelphia	PA	19141-5299	USA

Client Contact Last Name	First Name	MI	Suffix
Bowman	Gary	P	Sr

Client Contact Title	Phone	Ext
President	610 636-4574	

E-mail Address	FAX
Gbowman@northstar.com	

III. SITE INFORMATION

DEP Site ID# | Site Name

EPA ID# | Estimated Number of Employees to be Present at Site

Description of Site

County Name | Municipality | City ☐ | Boro ☐ | Twp ☐ | State

County Name | Municipality | City ☐ | Boro ☐ | Twp ☐ | State

Site Location Line 1 | Site Location Line 2

Site Location Last Line – City | State | ZIP+4

Detailed Written Directions to Site

Site Contact Last Name | First Name | MI | Suffix

Site Contact Title | Site Contact Firm

Mailing Address Line 1 | Mailing Address Line 2

Address Last Line – City | State | ZIP+4

Phone | Ext | FAX | E-mail Address

NAICS Codes (Two- & Three-Digit Codes – List All That Apply) | 6-Digit Code (Optional)

Site to Client Relationship

IIIa. PROPERTY OWNER INFORMATION

☐ Same as Tank Owner Identified in Section II. ☐ Different than Tank Owner Identified in Section II; identified below.

Organization Name or Registered Fictitious Name | Employer ID# (EIN) | Dun & Bradstreet ID#

Individual Last Name | First Name | MI | Suffix | SSN

Additional Individual Last Name | First Name | MI | Suffix | SSN

Mailing Address Line 1 | Mailing Address Line 2

Address Last Line – City | State | ZIP+4 | Country

Property Owner Contact Last Name | First Name | MI | Suffix

Property Owner Contact Title | Phone | Ext

E-mail Address | FAX

IV. FACILITY INFORMATION

DEP Storage Tank Facility ID#	Facility Name	Facility Kind

Facility Location Line 1 (if different than Site Location)	Facility Location Line 2

Facility Location Last Line - City	State	ZIP+4

Latitude/Longitude Point of Origin	Latitude			Longitude		
	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds

Horizontal Accuracy Measure	Feet	--*or*--	Meters
Horizontal Reference Datum Code	☐ North American Datum of 1927 ☐ North American Datum of 1983 ☐ World Geodetic System of 1984		
Horizontal Collection Method Code			
Reference Point Code			
Altitude	Feet	--*or*--	Meters
Altitude Datum Name	☐ The National Geodetic Vertical Datum of 1929 ☐ The North American Vertical Datum of 1988 (NAVD88)		
Altitude (Vertical) Location Datum Collection Method Code			
Geometric Type Code			
Data Collection Date			

Source Map Scale Number		Inch(es)	=	Feet
	--*or*--	Centimeter(s)	=	Meters

Flammable & Combustible Liquid Permit # (if applicable)
State or Municipality that Issued the Permit

FACILITY OPERATOR INFORMATION

☐ **Same as Owner Identified in Section II.** ☐ **Different than Owner Identified in Section II; identified below.**

DEP Client ID#	Client Type / Code

Organization Name or Registered Fictitious Name	Employer ID# (EIN)	Dun & Bradstreet ID#

Individual Last Name	First Name	MI	Suffix	SSN

Additional Individual Last Name	First Name	MI	Suffix	SSN

Mailing Address Line 1	Mailing Address Line 2

Address Last Line – City	State	ZIP+4	Country

Client Contact Last Name	First Name	MI	Suffix

Client Contact Title	Phone	Ext

E-mail Address	FAX

V. CHANGE OF OWNERSHIP INFORMATION

☐ **All Tanks Changed Ownership at the Facility**

☐ **Some Tanks Changed Ownership at the Facility** (List all applicable tank numbers in Section VI.)

OWNERSHIP CHANGE TO - Client information is noted in Section II.

OWNERSHIP CHANGE FROM (previous owner information)

Name			
Employer ID# (EIN) or SSN			
Mailing Address Line 1			
Mailing Address Line 2			
Address Last Line - City		**State**	**ZIP+4**
Previous Facility ID#			

DATE OF SALE/TRANSFER	

SIGNATURE & CERTIFICATION OF PREVIOUS OWNER

Previous owner's signature is not available. As required, the "new" owner has attached a deed of transfer or other proof of ownership to this application. ☐ **Yes** ☐ **No** ☐ **N/A**

I have reviewed this form for submission to the Department. I certify under penalty of law as provided in 18 PA. C.S.A. §4903 (relating to false swearing) and 18 PA. C.S.A. §4904 (relating to unsworn falsification to authorities), that I have the authority to sign this Section for the transfer of permit or registration for the storage tanks listed herein. Further, I certify that all information provided in Section V is true, accurate and complete to the best of my knowledge and belief.

Type or Print Previous Owner Name

Previous Owner Signature	**Title**	**Date**

Facility ID# 51-33620 Facility Name Phila Ref Point Breeze

VI. STORAGE DESCRIPTION

Type or print legibly each regulated storage tank at this facility under your ownership.
Status Codes: C-Currently in Use T-Temporarily Out of Use E-Exempt R-Removed P-Closed In Place
Type Codes: M-Manufactured F-Field Constructed

A. ABOVEGROUND TANKS. List all new tanks. If amending information, list only those tanks being amended. Copy this page if more lines are needed.

Tank#	Prev Status	New Status	Type	Install Date (Mo/Day/Yr)	Change of Status Date (Mo/Day/Yr)	Capacity (Gallons)	Substance Code (Currently or Last Stored)	CERCLA Name (If Hazardous Substance) Substance Name (If Other Petroleum Substance or Petroleum Based Mixture)	CAS# (If Hazardous Substance)	Exempt Reference Code
074A	C	R	F	1/1/1953	03/25/2021	2,935,800	Heavy Gas Oil			
A										
A										
A										
A										
A										
A										
A										
A										
A										

B. UNDERGROUND TANKS. List all new tanks. If amending information, list only those tanks being amended. Copy this page if more lines are needed.

Tank#	Prev Status	New Status	Type	Install Date (Mo/Day/Yr)	Change of Status Date (Mo/Day/Yr)	Capacity (Gallons)	Substance Code (Currently or Last Stored)	CERCLA Name (If Hazardous Substance) Substance Name (If Other Petroleum Substance or Petroleum Based Mixture)	CAS# (If Hazardous Substance)	Exempt Reference Code

Facility ID# 51-33620 Facility Name Phila Ref Point Breeze

VII. ABOVEGROUND & UNDERGROUND NEW TANK INSTALLATION INFORMATION

The DEP Certified Installer should complete this section. New tanks listed in Section VI must also be listed in this Section. Write the Tank Number(s) and place an ☒ in the appropriate box for each component that was installed.

Tank Construction & Corrosion Protection (1)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
Tank Manufacturer:						
Model:						
A. Unprotected Steel (Single Wall)	☐	☐	☐	☐	☐	☐
B. Cathodically Protected Steel (Galvanic)	☐	☐	☐	☐	☐	☐
C. Cathodically Protected Steel (Impressed Current)	☐	☐	☐	☐	☐	☐
D. Unprotected Steel (Double Wall)	☐	☐	☐	☐	☐	☐
E. Fiberglass (Single Wall)	☐	☐	☐	☐	☐	☐
F. Fiberglass (Double Wall)	☐	☐	☐	☐	☐	☐
G. Steel w/Plastic or Fiberglass Jacket or Double Wall Act 100	☐	☐	☐	☐	☐	☐
H. Steel With FRP Coating (Act 100 or Equivalent)	☐	☐	☐	☐	☐	☐
I. Steel with Lined Interior	☐	☐	☐	☐	☐	☐
J. Concrete	☐	☐	☐	☐	☐	☐
O. Cathodically Protected Double Wall Steel (Galvanic)	☐	☐	☐	☐	☐	☐
P. Cathodically Protected Steel with Liner	☐	☐	☐	☐	☐	☐
Q. Double Bottom (ASTs Only)	☐	☐	☐	☐	☐	☐
R. Molded Plastic Form (ASTs Only)	☐	☐	☐	☐	☐	☐
S. Stainless Steel	☐	☐	☐	☐	☐	☐
T. Aluminum	☐	☐	☐	☐	☐	☐
U. Fire Protected Double Wall AST	☐	☐	☐	☐	☐	☐
V. Steel with Plastic or Fiberglass Jacket or Double Wall Act 100 with Anodes	☐	☐	☐	☐	☐	☐
W. Steel with FRP Coating (Act 100 or Equivalent) with Anodes	☐	☐	☐	☐	☐	☐
X. Molded Plastic Form (Double Wall) (AST's Only)	☐	☐	☐	☐	☐	☐

Facility ID# 51-33620 Facility Name Phila Ref Point Breeze

Underground Piping Construction & Corrosion Protection – Single/Inner Wall (28)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
Primary (Inner) Piping Manufacturer:						
Model:						
A. Bare Steel	☐	☐	☐	☐	☐	☐
B. Cathodically Protected Metallic	☐	☐	☐	☐	☐	☐
C. Copper	☐	☐	☐	☐	☐	☐
D. Fiberglass	☐	☐	☐	☐	☐	☐
E. Flexible (Non-Metallic)	☐	☐	☐	☐	☐	☐
G. No Dispensing Piping	☐	☐	☐	☐	☐	☐
99. Other: _____	☐	☐	☐	☐	☐	☐

Underground Piping Construction & Corrosion Protection – Outer Wall (29)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
Secondary (Outer) Piping Manufacturer:						
Model:						
A. Bare Steel	☐	☐	☐	☐	☐	☐
B. Cathodically Protected Metallic	☐	☐	☐	☐	☐	☐
D. Fiberglass	☐	☐	☐	☐	☐	☐
E. Flexible (Non-Metallic)	☐	☐	☐	☐	☐	☐
G. No Dispensing Piping	☐	☐	☐	☐	☐	☐
L. Poly-encased Stainless Steel	☐	☐	☐	☐	☐	☐
99. Other: _____	☐	☐	☐	☐	☐	☐

Facility ID# 51-33620 Facility Name Phila Ref Point Breeze

Aboveground Piping Construction & Corrosion Protection (3)	**Tank #**	**Tank #**	**Tank #**	**Tank #**	**Tank #**	**Tank #**
A. Carbon Steel	☐	☐	☐	☐	☐	☐
B. Cathodically Protected Metallic	☐	☐	☐	☐	☐	☐
C. Copper	☐	☐	☐	☐	☐	☐
D. Single Wall Fiberglass	☐	☐	☐	☐	☐	☐
E. Single Wall Flexible (Non-Metallic)	☐	☐	☐	☐	☐	☐
F. PVC	☐	☐	☐	☐	☐	☐
G. None	☐	☐	☐	☐	☐	☐
I. Double Wall - Metallic Primary	☐	☐	☐	☐	☐	☐
J. Double Wall - Rigid (FRP) Primary	☐	☐	☐	☐	☐	☐
K. Double Wall - Flexible Primary	☐	☐	☐	☐	☐	☐
L. Stainless Steel	☐	☐	☐	☐	☐	☐
99. Other: _____	☐	☐	☐	☐	☐	☐

Product Delivery System (4)	**Tank #**	**Tank #**	**Tank #**	**Tank #**	**Tank #**	**Tank #**
A. Suction: Check valve at pump	☐	☐	☐	☐	☐	☐
B. Suction: Check valve at tank	☐	☐	☐	☐	☐	☐
C. Pressure	☐	☐	☐	☐	☐	☐
D. Gravity fed	☐	☐	☐	☐	☐	☐
E. None	☐	☐	☐	☐	☐	☐

Spill Prevention (6)	**Tank #**	**Tank #**	**Tank #**	**Tank #**	**Tank #**	**Tank #**
S. Permanently installed and liquid tight (single-walled)	☐	☐	☐	☐	☐	☐
D. Permanently installed and liquid tight (double-walled)	☐	☐	☐	☐	☐	☐
N. None (AST only)	☐	☐	☐	☐	☐	☐
E. Fill in less than 25 gallons (exempt)	☐	☐	☐	☐	☐	☐

Facility ID# 51-33620 Facility Name Phila Ref Point Breeze

Overfill Prevention (7)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Overfill alarm	☐	☐	☐	☐	☐	☐
E. Fill in less than 25 gallons (exempt)	☐	☐	☐	☐	☐	☐
N. None (AST only)	☐	☐	☐	☐	☐	☐
S. Drop tube shutoff device	☐	☐	☐	☐	☐	☐
Y. Yes (AST only) Type: _____	☐	☐	☐	☐	☐	☐

Emergency Containment (16) ASTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No - Explain: _____	☐	☐	☐	☐	☐	☐
Y. Yes (includes double-walled tanks with required appurtenances)	☐	☐	☐	☐	☐	☐
V. Underground vault	☐	☐	☐	☐	☐	☐

Secondary Containment (17) Single Wall ASTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No - Explain: _____	☐	☐	☐	☐	☐	☐
Y. Yes	☐	☐	☐	☐	☐	☐
V. Underground vault	☐	☐	☐	☐	☐	☐

Stage I Vapor Recovery (19) USTs and ASTs when applicable	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Coaxial	☐	☐	☐	☐	☐	☐
B. 2 Point	☐	☐	☐	☐	☐	☐
N. None or incomplete	☐	☐	☐	☐	☐	☐

Facility ID# 51-33620 Facility Name Phila Ref Point Breeze

Tank-top Containment Sumps Present (Product Piping Only) (21) USTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. None – Explain: _____	☐	☐	☐	☐	☐	☐
S. At some penetrations and liquid tight – Explain: _____	☐	☐	☐	☐	☐	☐
A. At all penetrations and liquid tight	☐	☐	☐	☐	☐	☐

Under-dispenser Containment Present (22) USTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. None – Explain: _____	☐	☐	☐	☐	☐	☐
S. At some dispensers and liquid tight – Explain: _____	☐	☐	☐	☐	☐	☐
A. Under all dispensers and liquid tight	☐	☐	☐	☐	☐	☐

Line Leak Detector Shuts Off Pump (23) USTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No	☐	☐	☐	☐	☐	☐
Y. Yes	☐	☐	☐	☐	☐	☐

Tank Supplies Emergency Generator (25)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No	☐	☐	☐	☐	☐	☐
Y. Yes	☐	☐	☐	☐	☐	☐

Facility ID# 51-33620 Facility Name Phila Ref Point Breeze

VIII. ABOVEGROUND & UNDERGROUND TANK INFORMATION FOR PERMANENT CLOSURE

Write the Tank Number(s) and place an ☒ in the appropriate box for each tank that was removed or closed in place.

Items 2 & 3 below apply to large ASTs and all USTs	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
	074A					
1. Contamination suspected or observed and notification of contamination form was submitted to the appropriate DEP regional office.	☐	☐	☐	☐	☐	☐
2. Closure document submitted to the appropriate DEP regional office.	☒	☐	☐	☐	☐	☐
3. Closure document kept on file by owner.	☒	☐	☐	☐	☐	☐

IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. This registration is conditioned upon compliance with provisions of the Storage Tank and Spill Prevention Act of 1989, all applicable regulations, and with the requirements for obtaining and maintaining a permit required under this Act. I certify my responsibility for assuring the following permit requirements:

- Storage tank systems are in compliance with applicable administrative, technical and operational requirements as specified in Subchapter E for underground tanks or Subchapter F or G for aboveground tanks.
- Tank handling and inspection activities are performed by an individual possessing DEP certification in the appropriate category as required in Subchapters A and B.
- Underground storage tanks meet the applicable financial responsibility requirements of Subchapter H (relating to financial responsibility requirements).
- A Spill Prevention Response (SPR) Plan must be submitted to the appropriate DEP regional office for facilities that have aboveground storage tanks where the total capacity of all aboveground tanks is greater than 21,000 gallons.
- Other state and local permits required for operation of the tank system have been attained.

My signature represents to the Department that I own the storage tank(s) and am aware of the responsibilities and potential liabilities as an "owner" arising under the Storage Tank and Spill Prevention Act of 1989 and all applicable regulations. I am also advised that statements made on this registration is made subject to the penalties of 18 PA. C.S.A. Section 4904 relating to unsworn falsification to authorities.

Type or Print Owner Name Gary Bowman

Owner Signature	Title	Date
	President	4/20/2021

Information & Invoices should be sent to:

- ☐ **Tank Owner Contact**
- ☐ **Site Contact**
- ☒ **Facility Operator**
- ☐ **Other Responsible Party Identified Below**

Organization Name or Registered Fictitious Name		Employer ID# (EIN)		Dun & Bradstreet ID#
Northstar Contracting Group, Inc.				
Individual Last Name	**First Name**	**MI**	**Suffix**	**SSN**
Bowman	Gary	P	Sr	
Additional Individual Last Name	**First Name**	**MI**	**Suffix**	**SSN**

Mailing Address Line 1	Mailing Address Line 2			
250 E. Adams Avenue				
Address Last Line – City		**State**	**ZIP+4**	**Country**
Philadelphia		PA	19124	USA
Contact Title			**Phone**	**Ext.**
President				
E-mail Address				
Gbowman@northstar.com				
Client to Site (Facility) Relationship				

X. INSTALLER / REMOVER CERTIFICATION

This section must be completed by the certified tank handler(s) who is responsible for the installation or removal from service of the aboveground and underground storage tank systems listed in Section VI. Tank modification activity must be submitted on a "Tank Modification Report" form.

SIGNATURE & CERTIFICATION OF INSTALLER(S) / REMOVER(S)

As the certified tank handler responsible for the tank handling activities in the category or categories listed, I certify that all tank handling activities were conducted in compliance with the design, installation and operation standards of the Storage Tank and Spill Prevention Act of 1989 and all applicable regulations. I also certify, under penalty of law as provided in 18 PA C.S.A. 4904 (relating to unsworn falsification to authorities), that the information provided therein is true, accurate and complete to the best of my knowledge and belief.

Tank#	Installer/Remover Name	Construction Standard	Individual Certification#	Certification Category	Company Certification#	Installer/Remover Signature	Date
074 A	**Kristian Satterthwaite**		**5081**	**AFR**	**1557**		

XI. INSPECTOR CERTIFICATION

This section must be completed by the DEP Certified Tank Inspector(s) who is responsible for verifying the installation standards for field constructed tanks and aboveground tanks greater than 21,000 gallons listed in Section VI. (Type or Print legibly) A DEP Certified Inspector may also be responsible for inspecting existing ASTs which are entering regulated service for the first time with no tank handling activities.

SIGNATURE & CERTIFICATION OF INSPECTOR(S)

As the certified tank inspector responsible for verifying tank handling activities and construction standards, I certify that the tank(s) listed below are constructed to appropriate industry standards and, if applicable, to manufacturer's specifications; that the tank(s) have been tested as required by industry standards; and that the tank(s) meet or exceed applicable design and operating standards; and are in compliance with the requirements of the Storage Tank and Spill Prevention Act of 1989, and all applicable regulations. I also certify under penalty of law as provided in 18 PA C.S.A. 4904 (relating to unsworn falsification to authorities), that the information provided herein is true, accurate and complete to the best of my knowledge and belief.

Tank#	Inspector Name	Construction Standard	Individual Certification#	Certification Category	Company Certification#	Inspector Signature	Date

XII. SITE SPECIFIC INSTALLATION PERMIT NUMBER

If a site-specific permit was required for a new tank installation, write the tank number(s) and permit number(s) in the appropriate box.

Site-Specific Installation Permit	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#

Appendix F

Soil Boring Logs

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-663-01

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/19/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/19/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3-3.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-663-01-SS01		0	Historic fill (brick/ash/gravel) with SAND and GRAVEL	
2						
3				0		
4				0		
5					**REFUSAL @ 4.3' BGS**	
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-663-02

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/19/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/19/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3-3.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-663-02-SS01		0	Historic fill (brick/ash/gravel) with SAND and GRAVEL	
2						
3				0		
4				0		
5					**REFUSAL @ 4.3' BGS**	
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-663-03

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/19/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/19/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 2-2.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-663-03-SS01		0.4	Historic fill (brick/ash/gravel) with SAND and GRAVEL	
2						
3				3.8		
4				0.7		
5					**REFUSAL @ 4.3' BGS**	
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-663-04

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/19/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/19/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3-3.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-663-04-SS01		0.4	Historic fill (brick/ash/gravel) with SAND and GRAVEL	
2						
3				0.5		
4				0.3		
5						
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-663-05

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/19/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/19/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3.5-4'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1				0.4	Historic fill (brick/ash/gravel) with SAND and GRAVEL	
2						
3				0.5		
4		PB-663-05-SS01		0.3	Historic fill (brick/ash/gravel) with SAND, and Gravel, petroleum sheen	
5					**REFUSAL @ 4.0' BGS**	
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-663-06

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/19/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/19/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 2.5-3'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-663-06-SS01		0.2	Historic fill (brick/ash/gravel) with SAND and GRAVEL	
2						
3				3.8		
4				0.2		
5					FILL, gravel	
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-663-07

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/19/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/19/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3-3.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-663-07-SS01		0	Historic fill (brick/ash/gravel) with SAND and GRAVEL	
2						
3				0		
4				0		
5					FILL, gravel	
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-663-08

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/20/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/20/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3-3.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-663-08-SS01		0.2	Historic fill (brick/ash/gravel), sand	
2						
3				0.2		
4				0.5		
5						
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-663-09

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/20/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/20/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3-3.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-663-09-SS01		0	Topsoil with ash/gravel FILL Historic fill (brick/ash/gravel)	
2				0.3		
3						
4				0.5		
5						
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-663-10

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/20/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/20/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3-3.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
					Topsoil with Historic fill (brick/ash/gravel)	
1				0.3	Historic fill (brick/ash/gravel)	
2				0		
3						
4		PB-663-10-SS01		0		
5					Historic fill (brick/ash/gravel) with some CLAY	
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-663-11

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/18/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/18/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 1.5-2'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1					Stone, gravel	
2		PB-663-11-SS01		2.4	Historic fill (brick/ash/gravel), sand, schist	
3					Sand/Schist	
4						
5						
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-663-12

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/20/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/20/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3-3.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-663-12-SS01		0	Topsoil with black FILL, ashy black FILL with GRAVEL, ashy	
2						
3				0.3		
4						
5				0.3		
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-663-13

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/20/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/20/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3-3.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-663-13-SS01			Historic fill (brick/ash/gravel) with SAND and GRAVEL	
2						
3						
4						
5						
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-663-14

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/20/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/20/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 1-1.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-663-14-SS01		2.4	FILL, sandy	
2				7.4	Historic fill (brick/ash/gravel), oil sheeen, odor	
3					Historic fill (brick/ash/gravel)	
4				1.4		
5						
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC	Soil Boring Log	Boring No.: PB-663-15
		Page 1 of 1
Client: Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 11/30/21
Project Name: Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 11/30/21
Project No.: 200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor: TPI Environmental, Inc.		Ground Elevation: N/A
Driller: Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter: 2"	Sampling Method: Grab	Total Depth: 6.5'
Logged By: TS	Sample Interval: 0.0-0.5', 3.0-3.5', 6.0-6.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-663-15-0.0-0.5		0	Historic fill (ash/brick/gravel), black	
2						
3						
4		PB-663-15-3.0-3.5		0		
5						
6						
7		PB-663-15-6.0-6.5		0		
8					**END OF BORING**	
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC		Soil Boring Log	Boring No.: PB-663-15
			Page 1 of 1
Client: Philadelphia Energy Solutions Refining and Marketing, LLC			Date Start: 01/17/22
Project Name: Aboveground Storage Tank Closure - Tank Group 01			Date Finish: 01/17/22
Project No.: 200.00135.005		Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor: TPI Environmental, Inc.			Ground Elevation: N/A
Driller: Scott T.		Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter: 2"		Sampling Method: Grab	Total Depth: 15'
Logged By: TS		Sample Interval: 14.5-15'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15				15.2	gray SILT with some SAND	
16					**END OF BORING**	
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC	**Soil Boring Log**	Boring No.: PB-663-16
		Page 1 of 1
Client: Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 12/01/21
Project Name: Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 12/01/21
Project No.: 200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor: TPI Environmental, Inc.		Ground Elevation: N/A
Driller: Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter: 2"	Sampling Method: Grab	Total Depth: 6.5'
Logged By: TS	Sample Interval: 0.0-0.5', 3.0-3.5', 6.0-6.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-663-16-0.0-0.5		0	Historic fill (ash/brick/gravel), black	
2						
3						
4		PB-663-16-3.0-3.5		0		
5						
6						
7		PB-663-16-6.0-6.5		17.8		
8					**END OF BORING**	
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC	Soil Boring Log	Boring No.: PB-663-17
		Page 1 of 1
Client: Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 12/01/21
Project Name: Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 12/01/21
Project No.: 200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor: TPI Environmental, Inc.		Ground Elevation: N/A
Driller: Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter: 2"	Sampling Method: Grab	Total Depth: 6.5'
Logged By: TS	Sample Interval: 0.0-0.5', 6.0-6.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-663-16-0.0-0.5		0	FILL, brick with SAND	
2						
3						
4				0		
5						
6						
7		PB-663-16-6.0-6.5		0		
8					**END OF BORING**	
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-666-06

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/18/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/18/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3.5-4'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-666-01-SS01		0.2	SAND, dark brown	
2						
3				0.4		
4					brown SAND with some GRAVEL	
5				0.2	Historic fill (brick/ash/gravel) with SAND, brown	
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC	Soil Boring Log	Boring No.: PB-666-02
		Page 1 of 1
Client: Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/18/21
Project Name: Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/18/21
Project No.: 200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor: TPI Environmental, Inc.		Ground Elevation: N/A
Driller: Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter: 2"	Sampling Method: Grab	Total Depth: 5'
Logged By: TS	Sample Interval: 2-2.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
					Historic fill (brick/ash/gravel), rock, gravel	
1				1.0		
					Historic fill (brick/ash/gravel)	
2						
		PB-666-02-SS01				
3				12.6	Historic fill (brick/ash/gravel) with CLAY	
4						
				2.5		
5						
					END OF BORING	
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-666-03

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/18/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/18/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 1-1.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-666-03-SS01		0.4	Historic fill (brick/ash/gravel)	
2				0.5		
3				0.2		
4						
5						
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-666-04

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/18/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/18/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 1.5-2"	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1					Historic fill (brick/ash/gravel), SAND	
2		PB-666-04-SS01		4.9		
3						
4						
5						
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-666-05

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 1/17/22
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 1/17/22
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3-3.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1						
2						
3						
4		PB-666-05		7.2	FILL, sandy with SILT and GRAVEL	
5						
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-666-06

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/19/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/19/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3.5-4'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-666-06-SS01		5.1	Topsoil with Historic Fill (brick/ash/gravel)	
2					Historic fill (brick/ash/gravel)	
3				11.7		
4					Historic fill (brick/ash/gravel) with oily sheen	
5				2.1		
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-666-07

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/18/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/18/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3.5-4'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1					Historic fill (brick/ash/gravel) with GRAVEL	
2				7.4		
3						
4		PB-666-07-SS01			Historic fill (brick/ash/gravel) with GRAVEL, moist	
5					Historic fill (brick/ash/gravel) with SAND, some SILT	
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-666-08

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 1/17/22
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 1/17/22
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 4.5-5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1						
2						
3						
4						
5		PB-666-08		5.1	gray SILT	
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-666-09

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 1/17/22
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 1/17/22
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3-3.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1						
2						
3						
4		PB-666-09		12.8	FILL, sandy, fine, with GRAVEL	
5						
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-666-10

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 1/17/22
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 1/17/22
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3-3.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1						
2						
3						
4		PB-666-10		9.3	FILL, sandy, fine, with GRAVEL	
5						
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-666-11

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/18/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/18/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3.5-4'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1				0.8	Historic fill (brick/ash/gravel) with GRAVEL	
2						
3						
4		PB-666-11-SS01		1.6		
5				0.7		
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC			**Soil Boring Log**	Boring No.: PB-666-11R
				Page 1 of 1
Client: Philadelphia Energy Solutions Refining and Marketing, LLC				Date Start: 11/29/21
Project Name: Aboveground Storage Tank Closure - Tank Group 01				Date Finish: 11/29/21
Project No.: 200.00135.005			Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor: TPI Environmental, Inc.				Ground Elevation: N/A
Driller: Scott T.			Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter: 2"			Sampling Method: Grab	Total Depth: 15'
Logged By: TS			Sample Interval: 0-0.5, 6.0-6.5, 14.5-15.0	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-666-12R-0.0-0.5		3.1	brown SAND, fine with SILT	
2						
3						
4						
5						
6						
7		PB-666-12R-6.0-6.5		0	FILL (brick, ash, gravel)	
8						
9						
10						
11						
12						
13						
14						
15		PB-666-12R-14.5-15.0		15.2	brown CLAY with gray SILT, moist	
16					**END OF BORING**	
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-666-12

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/18/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/18/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 2.5-3'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1				17.1	Historic fill (brick/ash/gravel) with rock	
2						
3		PB-666-12-SS01		165.4	Oil stained soil	
4				3.2	Historic fill (brick/ash/gravel)	
5						
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC					**Soil Boring Log**	Boring No.: PB-666-12R
						Page 1 of 1
Client: Philadelphia Energy Solutions Refining and Marketing, LLC						Date Start: 11/29/21
Project Name: Aboveground Storage Tank Closure - Tank Group 01						Date Finish: 11/29/21
Project No.: 200.00135.005					Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor: TPI Environmental, Inc.						Ground Elevation: N/A
Driller: Scott T.					Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter: 2"					Sampling Method: Grab	Total Depth: 15'
Logged By: TS					Sample Interval: 0-0.5, 6.0-6.5, 14.5-15.0	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-666-12R-0.0-0.5		2.5	brown SAND, fine with SILT	
2						
3						
4						
5						
6					dark brown SAND, with SILT	
7		PB-666-12R-6.0-6.5		9.4		
8						
9						
10						
11						
12						
13						
14						
15		PB-666-12R-14.5-15.0		129.7	dark brown SAND, coarse, moist	
16					**END OF BORING**	
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-666-13

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 1/17/22
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 1/17/22
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3-3.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1						
2						
3						
4						
5		PB-666-13		22.3	FILL, sandy, fine, with GRAVEL	
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-666-14

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/18/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/18/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 4-4.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1				0.7	Historic fill (brick/ash/gravel) with SAND	
2						
3						
4						
5		PB-666-14-SS01		2.6		
				0	Historic fill (brick/ash/gravel) with CLAY	
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-666-15

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/18/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/18/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3.5-4'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1				0.5	Historic fill (brick/ash/gravel) with SAND, brown	
2						
3						
4		PB-666-15-SS01		1.4	SILT, sandy, moist	
5				0.7	SILT, sandy, brown	
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-666-16

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/18/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/18/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3-3.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-666-16-SS01		0.0	Historic fill (brick/ash/gravel)	
2						
3						
4				0.9		
5				0		
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC	**Soil Boring Log**	Boring No.: PB-666-17
		Page 1 of 1
Client: Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/18/21
Project Name: Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/18/21
Project No.: 200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor: TPI Environmental, Inc.		Ground Elevation: N/A
Driller: Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter: 2"	Sampling Method: Grab	Total Depth: 5'
Logged By: TS	Sample Interval: 3.5-4'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1					Historic fill (brick/ash/gravel)	
2						
3						
4		PB-666-17-SS01		1.2	Historic fill (brick/ash/gravel), ash, staining	
5					Historic fill (brick/ash/gravel)	
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC	Soil Boring Log	Boring No.: PB-666-18
		Page 1 of 1
Client: Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/18/21
Project Name: Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/18/21
Project No.: 200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor: TPI Environmental, Inc.		Ground Elevation: N/A
Driller: Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter: 2"	Sampling Method: Grab	Total Depth: 5'
Logged By: TS	Sample Interval: 3-3.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-666-18-SS01		0.0	brown SAND (fill)	
2						
3				0	FILL, brick, ash	
4				0	Historic fill (brick/ash/gravel)	
5						
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-666-19

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/18/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/18/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3-3.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1				0	Historic fill (brick/ash/gravel)	
2						
3				0		
4		PB-666-19-SS01			CLAY, gray with SAND, red	
5				0	Historic fill (brick/ash/gravel)	
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-666-20

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/18/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/18/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3.5-4'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1				0	Historic fill (brick/ash/gravel)	
2						
3						
4		PB-666-20-SS01		14.6		
5				0.2		
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC					**Soil Boring Log**	Boring No.: PB-666-20R
						Page 1 of 1
Client: Philadelphia Energy Solutions Refining and Marketing, LLC						Date Start: 12/01/21
Project Name: Aboveground Storage Tank Closure - Tank Group 01						Date Finish: 12/01/21
Project No.: 200.00135.005					Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor: TPI Environmental, Inc.						Ground Elevation: N/A
Driller: Scott T.					Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter: 2"					Sampling Method: Grab	Total Depth: 15'
Logged By: TS					Sample Interval: 0-0.5, 6.0-6.5, 14.5-15.0	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-666-20R-0.0-0.5		0	black FILL with SAND	
2						
3						
4						
5						
6						
7		PB-666-20R-6.0-6.5		0		
8						
9						
10						
11						
12						
13						
14						
15		PB-666-20R-14.5-15.0		17.8	brown/gray SILT and SAND	
16					**END OF BORING**	
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-666-21

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/18/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/18/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 4.5-5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1				0.8	Historic fill (brick/ash/gravel)	
2						
3				1.1		
4						
5		PB-666-21-SS01		1.2	Historic fill (brick/ash/gravel) with light oil staining	Duplicate collected
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC	**Soil Boring Log**	Boring No.: PB-666-21R
		Page 1 of 1
Client: Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 12/01/21
Project Name: Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 12/01/21
Project No.: 200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor: TPI Environmental, Inc.		Ground Elevation: N/A
Driller: Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter: 2"	Sampling Method: Grab	Total Depth: 15'
Logged By: TS	Sample Interval: 0-0.5, 6.0-6.5, 14.5-15.0	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-666-21R-0.0-0.5		0	FILL, sandy with brown SILT	
2						
3						
4						
5						
6						
7		PB-666-21R-6.0-6.5		20.1	black SILT, staining, with GRAVEL	
8						
9						
10						
11						
12						
13						
14						
15		PB-666-21R-14.5-15.0		45.2	brown/gray SILT	
16					**END OF BORING**	
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-666-22

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/18/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/18/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3.5-4'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1				1.4	Historic fill (brick/ash/gravel)	
2						
3						
4						
5		PB-666-22-SS01		26.6	Historic fill (brick/ash/gravel) with GRAVEL	
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-666-23

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/19/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/19/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3-3.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1					FILL, black GRAVEL	
2				0.6		
3						
4						
5		PB-666-23-SS01		1.7		
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-666-24

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/19/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/19/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3.5-4'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1				64.5	Topsoil with FILL, sandy	
2						
3						
4		PB-666-24-SS01		1174	FILL, sandy, oily sheen	
5				46.3		
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-666-25

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/19/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/19/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3-3.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-666-25-SS01		0	Topsoil with Historic Fill (brick/ash/gravel)	
2					Historic fill (brick/ash/gravel)	
3				0		
4						
5				0		
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-666-26

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 11/30/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 11/30/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 6.5'
Logged By:	TS	Sample Interval: 0-0.5', 3.5-4.0', 6.0-6.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-666-28-0.0-0.5		0	brown SAND, coarse	
2						
3						
4		PB-666-28-3.5-4.0		12.5	brown SAND with SILT	
5						
6						
7		PB-666-28-6.0-6.5		30.2	black SILT with SAND	
8					**END OF BORING**	
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-666-27

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 11/30/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 11/30/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 6.5'
Logged By:	TS	Sample Interval: 0-0.5', 3.5-4.0', 6.0-6.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-666-28-0.0-0.5		0	brown SAND, fine, with SILT	
2						
3						
4		PB-666-28-3.5-4.0		0		
5						
6						
7		PB-666-28-6.0-6.5		0	brown SAND, fine, with some GRAVEL	
8					**END OF BORING**	
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-666-28

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 11/30/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 11/30/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 6.5'
Logged By:	TS	Sample Interval: 0-0.5', 2.5-3.0', 6.0-6.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-666-28-0.0-0.5		0	brown SAND, medium, with SILT	
2						
3		PB-666-28-2.5-3.0		0		
4						
5						
6						
7		PB-666-28-6.0-6.5		0	**END OF BORING**	
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-666-29

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 11/29/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 11/19/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 6.5'
Logged By:	TS	Sample Interval: 0-0.5', 3.5-4.0', 6.0-6.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-666-29-0.0-0.5		14.7	brown SILT, sandy	
4		PB-666-29-3.5-4.0		17.9		
7		PB-666-29-6.0-6.5		9.4		
					END OF BORING	

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-668-01

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/19/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/19/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3-3.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-668-01-SS01		1.4	Historic fill (brick/ash/gravel)	
2						
3						
4						
5						
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-668-02

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/19/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/19/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3-3.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-668-02-SS01		0	Historic fill (brick/ash/gravel)	
2						
3				0		
4				0		
5						
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-668-03

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/19/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/19/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 1.5-2'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1					Historic fill (brick/ash/gravel)	
					Historic fill (brick/ash/gravel) with SAND	
2		PB-668-03-SS01		14.8		
3						
4					Historic fill (brick/ash/gravel) with CLAY, gray	
5						
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-668-04

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/19/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/19/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3-3.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-668-04-SS01			Historic fill (brick/ash/gravel), rock	
2				0	Historic fill (brick/ash/gravel)	
3				0		
4						
5				0		
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-668-05

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/19/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/19/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3-3.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-668-05-SS01			Historic fill (brick/ash/gravel) with SAND, brown	
2				0		
3				0		
4						
5				0		
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-668-06

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/19/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/19/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 2.5-3'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
					Historic fill (brick/ash/gravel), sand, stone	
1				21.1		
2						
3		PB-668-06-SS01		48.7	brown FILL, sandy, oil sheen	
4						
5				23.7		
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC	**Soil Boring Log**	Boring No.: PB-668-06R
		Page 1 of 1
Client: Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 11/30/21
Project Name: Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 11/30/21
Project No.: 200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor: TPI Environmental, Inc.		Ground Elevation: N/A
Driller: Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter: 2"	Sampling Method: Grab	Total Depth: 15'
Logged By: TS	Sample Interval: 0-0.5, 6.0-6.5, 14.5-15.0	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-668-06R-0.0-0.5		0	Historic fill (ash/brick/gravel) with SAND	
2						
3						
4						
5						
6						
7		PB-668-06R-6.0-6.5		22.8		
8						
9						
10						
11						
12						
13						
14						
15		PB-666-06R-14.5-15.0		13.6	brown/black SILT	
16					**END OF BORING**	
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-668-07

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/19/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/19/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3-3.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-668-07-SS01		0.2	Historic fill (brick/ash/gravel), ash, sand	
2						
3				3.1	Historic fill (brick/ash/gravel), clay, gravel, petroleum odor	
4						
5				0.2		
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-668-08

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 11/30/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 11/30/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 6.5'
Logged By:	TS	Sample Interval: 0-0.5', 2.5-3.0', 6.0-6.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-668-28-0.0-0.5		0	Historic fill (ash, brick, gravel) with SAND	
2						
3		PB-668-28-2.5-3.0		0		
4						
5						
6						
7		PB-668-28-6.0-6.5		0	**END OF BORING**	
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-672-01

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/20/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/20/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3-3.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1				0	Historic fill (brick/ash/gravel), sand, stone	
2						
3				0		
4		PB-672-01-SS01		0	Brown CLAY, sandy	
5						
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-672-02

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/20/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/20/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3-3.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-672-02-SS01		0	Historic fill (brick/ash/gravel), sand, stone	
2				0		
3				0		
4					Brown CLAY, sandy	
5						
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-672-03

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/20/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/20/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3-3.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-672-03-SS01		0	Historic fill (brick/ash/gravel)	
2				0		
3				0		
4						
5						
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-672-04

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/20/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/20/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3-3.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-672-04-SS01		0.3	Historic fill (brick/ash/gravel), sand, stone	
2				0.1		
3				0		
4					Brown CLAY, sandy	
5						
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-672-05

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/20/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/20/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3-3.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-672-05-SS01		0.3	Historic fill (brick/ash/gravel)	
2				0.1		
3				0.2		
4					Brown CLAY, sandy	
5						
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-672-06

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/20/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/20/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 4.5-5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1				0.3	Historic fill (brick/ash/gravel), ash, sand	
2						
3				0.2		
4						
5		PB-672-06-SS01		7.4	Historic fill (brick/ash/gravel) with brown CLAY, sandy	
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-672-07

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/20/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/20/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3-3.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-672-07-SS01		0	Historic fill (brick/ash/gravel), ash, sand	
2				0		
3				0		
4					Fill (sand with some clay)	
5						
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-672-08

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/20/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/20/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3-3.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
					Topsoil, stone	
1				0	Historic fill (brick/ash/gravel), sand, stone	
2				0		
3				0		
		PB-672-08-SS01				
4						
5						
					END OF BORING	
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-672-09

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/20/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/20/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3-3.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-672-09-SS01		0	Historic fill (brick/ash/gravel), sand, stone	
2				0		
3				0		
4						
5					Fill (gravel/sand)	
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-672-10

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/20/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/20/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3-3.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-672-10-SS01		0	Historic fill (brick/ash/gravel), sand, stone	
2				0		
3				0		
4						
5						
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-672-11

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/20/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/20/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3.5-4'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1				17.4	NO DESCRIPTION GIVEN	
2						
3						
4		PB-672-11-SS01		30.4		
5				21.7		
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-672-12

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/20/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/20/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 4.5-5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
					Topsoil	
1				6.4	Historic fill (brick/ash/gravel)	
2						
3				17		
4						
5		PB-672-12-SS01		21.6	Historic fill (brick/ash/gravel), oil staining	
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-672-13

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/20/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/20/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 4.5-5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1				3.2	Historic fill (brick/ash/gravel)	
2						
3				18.3		
4						
5		PB-672-13-SS01		25.1		
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-672-14

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/20/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/20/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 4.5-5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1				0	Historic fill (brick/ash/gravel)	
2						
3				0		
4						
5		PB-672-14-SS01		6.8	Historic fill (brick/ash/gravel) with CLAY, sandy	
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-672-15

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/20/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/20/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3-3.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-672-15-SS01		0	Historic fill (brick/ash/gravel)	
2				0		
3				0		
4						
5						
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-672-16

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/20/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/20/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3-3.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-672-16-SS01		0.5	Historic fill (brick/ash/gravel)	
2				0		
3				0		
4						
5						
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-672-17

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/20/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/20/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3-3.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-672-17-SS01		0	Historic fill (brick/ash/gravel)	
2				0		
3				0		
4						
5						
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-672-18

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/20/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/20/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3-3.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-672-18-SS01		0	Historic fill (brick/ash/gravel)	
2				0		
3				0		
4						
5						
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-672-19

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/20/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/20/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 3-3.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-672-19-SS01		0	Historic fill (brick/ash/gravel)	
2				0		
3				0		
4						
5						
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-672-20

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/20/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/20/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 4.5-5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1				0	Historic fill (brick/ash/gravel)	
2						
3				0		
4						
5		PB-672-20-SS01		1.9	Historic fill (brick/ash/gravel) with some CLAY, sandy	
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-672-21

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/20/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/20/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 2-2.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-672-21-SS01		1.6	Historic fill (brick/ash/gravel)	
2						
3				3.4		
4				1.1		
5						
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-672-22

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/20/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/20/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 1-1.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
				0.8	Topsoil	
1					Brown SAND with SILT	
		PB-672-22-SS01		3.2		
2						
3				1.3		
4					Historic fill (brick/ash/gravel) with SAND, silty	
5						
					END OF BORING	
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ransom Consulting, LLC

Soil Boring Log

Boring No.: PB-672-23

Page 1 of 1

Client:	Philadelphia Energy Solutions Refining and Marketing, LLC		Date Start: 5/21/21
Project Name:	Aboveground Storage Tank Closure - Tank Group 01		Date Finish: 5/21/21
Project No.:	200.00135.005	Location: Philadelphia, Pennsylvania	Permit No.: N/A
Drilling Contractor:	TPI Environmental, Inc.		Ground Elevation: N/A
Driller:	Scott T.	Drilling Method: Direct Push - 54DT	Datum: N/A
Hole Diameter:	2"	Sampling Method: Grab	Total Depth: 5'
Logged By:	TS	Sample Interval: 2-2.5'	Hammer wt./fall: N/A

Depth (ft)	Blow Counts	Sample No.	Recovery (inches)	PID/FID (ppm)	Lithologic Description	Remarks
1		PB-672-23-SS01		1.1	Topsoil with Historic Fill (brick/ash/gravel)	
2				0.2		
3					Historic fill (brick/ash/gravel) with black SAND	
4				3.5	Historic fill (brick/ash/gravel)	
5						
6					**END OF BORING**	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Appendix G

Site Assessment and Site Characterization Soil Results

Table G1
Summary of PESRM Soil Analytical Results
Tank Group 01
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Non-Res Direct Contact with Surface Soil MSCs	Non-Res Direct Contact with Subsurface Soil MSCs	Non-Res Soil-to-GW MSCs Used Aquifer TDS≤2500	Non-Res Soil Vapor Intrusion Screening Value	PB-663-01 PB-663-01-SS01 3 - 3.5 5/19/2021	PB-663-02 PB-663-02-SS01 3 - 3.5 5/19/2021	PB-663-03 PB-663-03-SS01 2 - 2.5 5/19/2021	PB-663-04 PB-663-04-SS01 3 - 3.5 5/19/2021	PB-663-05 PB-663-05-SS01 3.5 - 4 5/19/2021	PB-663-06 PB-663-06-SS01 2.5 - 3 5/19/2021	PB-663-07 PB-663-07-SS01 3 - 3.5 5/19/2021	PB-663-08 PB-663-08-SS01 3 - 3.5 5/20/2021
Volatile Organic Compounds												
Benzene	280	330	0.5	0.13	ND (0.001)	0.1 (0.056)	*0.27 (0.055)*	0.00048 J (0.00087)	ND (0.00083)	0.02 J (0.038)	ND (0.00067)	ND (0.00072)
Cumene	10000	10000	2500	2500	ND (0.002)	0.022 J (0.11)	0.014 J (0.11)	ND (0.0017)	ND (0.0016)	ND (0.0016)	ND (0.0013)	ND (0.0014)
1,2-Dibromoethane	3.7	4.2	0.005	0.0013	ND (0.001)	ND (0.056)	ND (0.00064)	ND (0.00087)	ND (0.00083)	ND (0.0008)	ND (0.00067)	ND (0.00072)
1,2-Dichloroethane	85	98	0.5	0.1	ND (0.002)	ND (0.11)	ND (0.0013)	ND (0.0017)	ND (0.0016)	ND (0.0016)	ND (0.0013)	ND (0.0014)
Ethyl Benzene	880	1000	70	46	ND (0.002)	0.038 J (0.11)	0.034 J (0.11)	ND (0.0017)	ND (0.0016)	0.018 J (0.077)	ND (0.0013)	ND (0.0014)
Methyl tert-butyl ether	8500	9800	96	1.4	ND (0.004)	ND (0.22)	ND (0.0026)	ND (0.0035)	ND (0.0033)	ND (0.0032)	ND (0.0027)	ND (0.0029)
Toluene	10000	10000	100	44	0.0025 (0.002)	4.4 (0.11)	2.8 (0.11)	0.0011 J (0.0017)	ND (0.0016)	1.9 (0.077)	ND (0.0013)	ND (0.0014)
1,2,4-Trimethylbenzene	4700	5400	300	35	ND (0.004)	0.17 J (0.22)	0.097 J (0.22)	ND (0.0035)	ND (0.0033)	0.063 J (0.15)	ND (0.0027)	ND (0.0029)
1,3,5-Trimethylbenzene	4700	5400	93	210	ND (0.004)	0.092 J (0.22)	0.039 J (0.22)	ND (0.0035)	ND (0.0033)	0.017 J (0.15)	ND (0.0027)	ND (0.0029)
Xylenes (total)	7900	9100	1000	990	ND (0.004)	0.268 J (0.22)	0.143 J (0.22)	ND (0.0035)	ND (0.0033)	0.087 J (0.15)	ND (0.0027)	ND (0.0029)
Semi-Volatile Organic Compound												
Anthracene	190000	190000	350		3.4 (0.19)	0.072 (0.02)	7.7 (0.48)	0.059 (0.0097)	0.13 (0.02)	0.87 (0.081)	0.15 (0.035)	0.32 (0.036)
Benzo(a)anthracene	130	190000	340		9 (0.19)	0.7 (0.02)	22 (0.48)	0.045 (0.0097)	0.42 (0.02)	5.3 (0.081)	0.19 (0.035)	1.2 (0.036)
Benzo(a)pyrene	91	190000	46		7.8 (0.19)	0.67 (0.02)	18 (0.48)	0.1 (0.0097)	0.57 (0.02)	4.8 (0.081)	0.12 (0.035)	0.96 (0.036)
Benzo(b)fluoranthene	76	190000	170		10 (0.19)	0.98 (0.02)	23 (0.48)	0.13 (0.0097)	0.79 (0.02)	6.6 (0.081)	0.21 (0.035)	1.3 (0.036)
Benzo(g,h,i)perylene	190000	190000	180		4.8 (0.19)	0.47 (0.02)	10 (0.48)	0.12 (0.0097)	0.53 (0.02)	3 (0.081)	0.17 (0.035)	0.59 (0.036)
Chrysene	760	190000	230		7 (0.19)	0.62 (0.02)	18 (0.48)	0.043 (0.0097)	0.36 (0.02)	4.3 (0.081)	0.19 (0.035)	0.84 (0.036)
Fluorene	130000	190000	3800		1.3 (0.19)	0.0096 J (0.02)	3.3 (0.48)	0.05 (0.0097)	0.014 J (0.02)	0.17 (0.081)	0.0042 J (0.035)	0.082 (0.036)
Naphthalene	66	77	25	25	1.2 (0.19)	0.1 (0.02)	0.92 (0.48)	0.23 (0.0097)	0.052 (0.02)	0.22 (0.081)	0.014 J (0.035)	0.089 (0.036)
Phenanthrene	190000	190000	10000		13 (0.19)	0.35 (0.02)	30 (0.48)	0.062 (0.0097)	0.91 (0.02)	3 (0.081)	0.49 (0.035)	1.1 (0.036)
Pyrene	96000	190000	2200		14 (0.19)	0.81 (0.02)	33 (0.48)	0.034 (0.0097)	0.56 (0.02)	6.4 (0.081)	0.37 (0.035)	1.5 (0.036)
Metals												
Lead	1000	190000	450		1470 (2.84)	7180 (15.1)	3380 (2.79)	461 (2.78)	23.1 (3.04)	27.7 (2.45)	1420 (2.05)	28.7 (2.13)

Notes:
1 All concentrations are presented in mg/kg (ppm). Detection limts are in parentheses.
2 Boldfaced and grey shaded concentrations exceed the Non-Res Direct Contact with Soil MSCs.
4 Underlined concentrations exceed the Non-Res Soil-to-GW MSCs Used Aquifer TDS≤2500.
5 Italicized and blue font concentrations exceed the Non-Res Soil Vapor Intrusion Screening Value.

Abbreviations:
ND -- Not Detected.
NA -- Not Analyzed.
J -- Estimated Concentration.

Table G1
Summary of PESRM Soil Analytical Results
Tank Group 01
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Non-Res Direct Contact with Surface Soil MSCs	Non-Res Direct Contact with Subsurface Soil MSCs	Non-Res Soil-to-GW MSCs Used Aquifer TDS≤2500	Non-Res Soil Vapor Intrusion Screening Value	PB-663-08 DUP-02 3 - 3.5 5/20/2021 FD	PB-663-09 PB-663-09-SS01 3 - 3.5 5/20/2021	PB-663-10 PB-663-10-SS01 3 - 3.5 5/20/2021	PB-663-11 PB-663-11-SS01 1.5 - 2 5/18/2021	PB-663-12 PB-663-12-SS01 3 - 3.5 5/20/2021	PB-663-13 PB-663-13-SS01 3 - 3.5 5/20/2021	PB-663-14 PB-663-14-SS01 1 - 1.5 5/20/2021	PB-663-15 PB-663-15-0.0-0.5 0 - 0.5 11/30/2021
Volatile Organic Compounds												
Benzene	280	330	0.5	0.13	ND (0.0008)	ND (0.00089)	ND (0.0008)	0.00063 (0.00063)	ND (0.00092)	ND (0.0005)	0.028 (0.0011)	NA
Cumene	10000	10000	2500	2500	ND (0.0016)	ND (0.0018)	ND (0.0016)	0.0011 J (0.0013)	ND (0.0018)	ND (0.001)	0.0026 (0.0022)	NA
1,2-Dibromoethane	3.7	4.2	0.005	0.0013	ND (0.0008)	ND (0.00089)	ND (0.0008)	ND (0.00063)	ND (0.00092)	ND (0.0005)	ND (0.0011)	NA
1,2-Dichloroethane	85	98	0.5	0.1	ND (0.0016)	ND (0.0018)	ND (0.0016)	ND (0.0013)	ND (0.0018)	ND (0.001)	ND (0.0022)	NA
Ethyl Benzene	880	1000	70	46	ND (0.0016)	ND (0.0018)	ND (0.0016)	0.0033 (0.0013)	ND (0.0018)	ND (0.001)	0.016 (0.0022)	NA
Methyl tert-butyl ether	8500	9800	96	1.4	ND (0.0032)	ND (0.0036)	ND (0.0032)	ND (0.0025)	ND (0.0037)	ND (0.002)	ND (0.0044)	NA
Toluene	10000	10000	100	44	ND (0.0016)	ND (0.0018)	ND (0.0016)	0.0062 (0.0013)	ND (0.0018)	ND (0.001)	0.071 (0.0022)	NA
1,2,4-Trimethylbenzene	4700	5400	300	35	ND (0.0032)	ND (0.0036)	ND (0.0032)	0.035 (0.0025)	ND (0.0037)	ND (0.002)	0.014 (0.0044)	NA
1,3,5-Trimethylbenzene	4700	5400	93	210	ND (0.0032)	ND (0.0036)	ND (0.0032)	0.011 (0.0025)	ND (0.0037)	ND (0.002)	0.0043 J (0.0044)	NA
Xylenes (total)	7900	9100	1000	990	ND (0.0032)	ND (0.0036)	ND (0.0032)	0.031 J (0.0025)	ND (0.0037)	ND (0.002)	0.072 J (0.0044)	NA
Semi-Volatile Organic Compound												
Anthracene	190000	190000	350		0.034 (0.0088)	0.85 (0.072)	0.17 (0.016)	28 (1.8)	0.032 (0.01)	0.0078 (0.0077)	6.2 (0.48)	NA
Benzo(a)anthracene	130	190000	340		0.15 (0.0088)	0.34 (0.072)	0.11 (0.016)	57 (1.8)	0.022 (0.01)	0.055 (0.0077)	14 (0.48)	NA
Benzo(a)pyrene	91	190000	46		0.11 (0.0088)	0.37 (0.072)	0.096 (0.016)	46 (1.8)	0.017 (0.01)	0.024 (0.0077)	18 (0.48)	NA
Benzo(b)fluoranthene	76	190000	170		0.14 (0.0088)	0.56 (0.072)	0.13 (0.016)	55 (1.8)	0.024 (0.01)	0.04 (0.0077)	19 (0.48)	NA
Benzo(g,h,i)perylene	190000	190000	180		0.062 (0.0088)	0.38 (0.072)	0.079 (0.016)	25 (1.8)	0.013 (0.01)	0.0084 (0.0077)	12 (0.48)	NA
Chrysene	760	190000	230		0.11 (0.0088)	0.32 (0.072)	0.087 (0.016)	46 (1.8)	0.016 (0.01)	0.038 (0.0077)	11 (0.48)	NA
Fluorene	130000	190000	3800		0.0066 J (0.0088)	0.1 (0.072)	0.27 (0.016)	11 (1.8)	0.037 (0.01)	0.0018 J (0.0077)	2.6 (0.48)	NA
Naphthalene	66	77	25	25	0.0055 J (0.0088)	0.014 J (0.072)	0.098 (0.016)	6.1 (1.8)	0.014 (0.01)	0.0019 J (0.0077)	1.1 (0.48)	NA
Phenanthrene	190000	190000	10000		0.15 (0.0088)	2.4 (0.072)	1 (0.016)	100 (1.8)	0.14 (0.01)	0.015 (0.0077)	19 (0.48)	NA
Pyrene	96000	190000	2200		0.22 (0.0088)	2.4 (0.072)	0.4 (0.016)	87 (1.8)	0.067 (0.01)	0.053 (0.0077)	24 (0.48)	NA
Metals												
Lead	1000	190000	450		54.9 (2.63)	2010 (2.16)	3420 (2.27)	**1010 (2.64)**	2430 (2.97)	73.6 (2.27)	34.4 (2.74)	785 (2.55)

Notes:
1 All concentrations are presented in mg/kg (ppm). Detection limts are in parentheses.
2 Boldfaced and grey shaded concentrations exceed the Non-Res Direct Contact with Soil MSCs.
4 Underlined concentrations exceed the Non-Res Soil-to-GW MSCs Used Aquifer TDS≤2500.
5 Italicized and blue font concentrations exceed the Non-Res Soil Vapor Intrusion Screening Value.

Abbreviations:
ND -- Not Detected.
NA -- Not Analyzed.
J -- Estimated Concentration.

Table G1
Summary of PESRM Soil Analytical Results
Tank Group 01
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Non-Res Direct Contact with Surface Soil MSCs	Non-Res Direct Contact with Subsurface Soil MSCs	Non-Res Soil-to-GW MSCs Used Aquifer TDS≤2500	Non-Res Soil Vapor Intrusion Screening Value	PB-663-15 PB-663-15-3.0-3.5 3 - 3.5 11/30/2021	PB-663-15 PB-663-15-6.0-6.5 6 - 6.5 11/30/2021	PB-663-15 PB-663-15-14.5-15.0 14.5 - 15 1/17/2022	PB-663-16 PB-663-16-0.0-0.5 0 - 0.5 12/1/2021	PB-663-16 PB-663-16-3.0-3.5 3 - 3.5 12/1/2021	PB-663-16 PB-663-16-6.0-6.5 6 - 6.5 12/1/2021	PB-663-17 PB-663-17-0.0-0.5 0 - 0.5 12/1/2021	PB-663-17 PB-663-17-6.0-6.5 6 - 6.5 12/1/2021
Volatile Organic Compounds												
Benzene	280	330	0.5	0.13	NA	NA	NA	NA	NA	NA	NA	NA
Cumene	10000	10000	2500	2500	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	3.7	4.2	0.005	0.0013	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	85	98	0.5	0.1	NA	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	880	1000	70	46	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	8500	9800	96	1.4	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	10000	10000	100	44	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	4700	5400	300	35	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	4700	5400	93	210	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	7900	9100	1000	990	NA	NA	NA	NA	NA	NA	NA	NA
Semi-Volatile Organic Compound												
Anthracene	190000	190000	350		NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	130	190000	340		NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	91	190000	46		NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	76	190000	170		NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	190000	190000	180		NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	760	190000	230		NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	130000	190000	3800		NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	66	77	25	25	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	190000	190000	10000		NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	96000	190000	2200		NA	NA	NA	NA	NA	NA	NA	NA
Metals												
Lead	1000	190000	450		834 (2.46)	1060 (2.4)	50.6 (3.35)	621 (3.02)	234 (2.53)	87.1 (2.71)	508 (2.92)	156 (2.79)

Notes:
1 All concentrations are presented in mg/kg (ppm). Detection limts are in parentheses.
2 Boldfaced and grey shaded concentrations exceed the Non-Res Direct Contact with Soil MSCs.
4 Underlined concentrations exceed the Non-Res Soil-to-GW MSCs Used Aquifer TDS≤2500.
5 Italicized and blue font concentrations exceed the Non-Res Soil Vapor Intrusion Screening Value.

Abbreviations:
ND -- Not Detected.
NA -- Not Analyzed.
J -- Estimated Concentration.

Table G1
Summary of PESRM Soil Analytical Results
Tank Group 01
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Non-Res Direct Contact with Surface Soil MSCs	Non-Res Direct Contact with Subsurface Soil MSCs	Non-Res Soil-to-GW MSCs Used Aquifer TDS≤2500	Non-Res Soil Vapor Intrusion Screening Value	PB-666-01 PB-666-01-SS01 3.5 - 4 5/18/2021	PB-666-02 PB-666-02-SS01 2 - 2.5 5/18/2021	PB-666-03 PB-666-03-SS01 1 - 1.5 5/18/2021	PB-666-04 PB-666-04-SS01 1.5 - 2 5/18/2021	PB-666-05 PB-666-05-SS01 3 - 3.5 1/17/2022	PB-666-06 PB-666-06-SS01 3.5 - 4 5/19/2021	PB-666-07 PB-666-07-SS01 3.5 - 4 5/18/2021	PB-666-08 PB-666-08-SS01 4.5 - 5 1/17/2022
Volatile Organic Compounds												
Benzene	280	330	0.5	0.13	ND (0.00047)	ND (0.00053)	ND (0.0009)	0.015 J (0.025)	ND (0.0007)	ND (0.00077)	ND (0.058)	ND (0.0008)
Cumene	10000	10000	2500	2500	ND (0.00095)	ND (0.0011)	ND (0.0018)	0.024 J (0.05)	ND (0.0014)	ND (0.0015)	0.15 (0.12)	0.00058 J (0.0016)
1,2-Dibromoethane	3.7	4.2	0.005	0.0013	ND (0.00047)	ND (0.00053)	ND (0.0009)	ND (0.00061)	ND (0.0007)	ND (0.00077)	ND (0.058)	ND (0.0008)
1,2-Dichloroethane	85	98	0.5	0.1	ND (0.00095)	ND (0.0011)	ND (0.0018)	ND (0.0012)	ND (0.0014)	ND (0.0015)	ND (0.12)	ND (0.0016)
Ethyl Benzene	880	1000	70	46	ND (0.00095)	ND (0.0011)	ND (0.0018)	0.052 (0.05)	ND (0.0014)	ND (0.0015)	0.041 J (0.12)	0.00083 J (0.0016)
Methyl tert-butyl ether	8500	9800	96	1.4	ND (0.0019)	ND (0.0021)	ND (0.0036)	ND (0.0024)	ND (0.0028)	ND (0.0031)	ND (0.23)	ND (0.0032)
Toluene	10000	10000	100	44	ND (0.00095)	ND (0.0011)	ND (0.0018)	0.057 (0.05)	ND (0.0014)	ND (0.0015)	ND (0.12)	0.0051 (0.0016)
1,2,4-Trimethylbenzene	4700	5400	300	35	ND (0.0019)	ND (0.0021)	ND (0.0036)	1.3 (0.1)	0.0011 J (0.0028)	ND (0.0031)	6.4 (0.23)	0.0065 (0.0032)
1,3,5-Trimethylbenzene	4700	5400	93	210	ND (0.0019)	ND (0.0021)	ND (0.0036)	0.61 (0.1)	0.00074 J (0.0028)	ND (0.0031)	5.5 (0.23)	0.0043 (0.0032)
Xylenes (total)	7900	9100	1000	990	ND (0.0019)	ND (0.0021)	ND (0.0036)	0.45 J (0.1)	ND (0.0028)	ND (0.0031)	0.77 J (0.23)	0.0097 J (0.0032)
Semi-Volatile Organic Compound												
Anthracene	190000	190000	350		0.086 (0.038)	ND (0.3)	0.23 (0.025)	ND (0.073)	ND (0.39)	7.5 (0.57)	ND (0.048)	ND (0.43)
Benzo(a)anthracene	130	190000	340		0.36 (0.038)	1 (0.3)	1.5 (0.025)	0.17 (0.073)	0.4 (0.39)	34 (0.57)	0.0098 J (0.048)	ND (0.43)
Benzo(a)pyrene	91	190000	46		0.3 (0.038)	1 (0.3)	1.4 (0.025)	0.33 (0.073)	0.35 J (0.52)	36 (0.57)	0.006 J (0.048)	ND (0.57)
Benzo(b)fluoranthene	76	190000	170		0.4 (0.038)	1.4 (0.3)	1.8 (0.025)	0.23 (0.073)	0.4 (0.39)	47 (0.57)	0.0091 J (0.048)	ND (0.43)
Benzo(g,h,i)perylene	190000	190000	180		0.13 (0.038)	2.8 (0.3)	0.72 (0.025)	7.2 (0.073)	0.21 J (0.52)	29 (0.57)	0.12 (0.048)	ND (0.57)
Chrysene	760	190000	230		0.25 (0.038)	0.74 (0.3)	1.2 (0.025)	0.12 (0.073)	0.22 J (0.39)	27 (0.57)	0.018 J (0.048)	ND (0.43)
Fluorene	130000	190000	3800		0.025 J (0.038)	0.05 J (0.3)	0.048 (0.025)	0.02 J (0.073)	ND (0.64)	1.2 (0.57)	ND (0.048)	ND (0.71)
Naphthalene	66	77	25	25	0.025 J (0.038)	ND (0.3)	0.26 (0.025)	0.12 (0.073)	ND (0.64)	0.55 J (0.57)	0.4 (0.048)	ND (0.71)
Phenanthrene	190000	190000	10000		0.29 (0.038)	0.6 (0.3)	1 (0.025)	0.19 (0.073)	0.099 J (0.39)	22 (0.57)	0.54 (0.048)	ND (0.43)
Pyrene	96000	190000	2200		0.48 (0.038)	0.95 (0.3)	1.9 (0.025)	0.17 (0.073)	0.55 (0.39)	39 (0.57)	0.066 (0.048)	ND (0.43)
Metals												
Lead	1000	190000	450		653 (2.22)	910 (2.18)	**8660 (7.1)**	**4310 (4.34)**	54.8 (2.53)	2200 (3.49)	49.7 (2.88)	258 (2.83)

Notes:
1 All concentrations are presented in mg/kg (ppm). Detection limts are in parentheses.
2 Boldfaced and grey shaded concentrations exceed the Non-Res Direct Contact with Soil MSCs.
4 Underlined concentrations exceed the Non-Res Soil-to-GW MSCs Used Aquifer TDS≤2500.
5 Italicized and blue font concentrations exceed the Non-Res Soil Vapor Intrusion Screening Value.

Abbreviations:
ND -- Not Detected.
NA -- Not Analyzed.
J -- Estimated Concentration.

Table G1
Summary of PESRM Soil Analytical Results
Tank Group 01
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Non-Res Direct Contact with Surface Soil MSCs	Non-Res Direct Contact with Subsurface Soil MSCs	Non-Res Soil-to-GW MSCs Used Aquifer TDS≤2500	Non-Res Soil Vapor Intrusion Screening Value	PB-666-09 PB-666-09-SS01 3 - 3.5 1/17/2022	PB-666-10 PB-666-10-SS01 3 - 3.5 1/17/2022	PB-666-11 PB-666-11-SS01 3.5 - 4 5/18/2021	PB-666-11R PB-666-11R-0.0-0.5 0 - 0.5 11/29/2021	PB-666-11R PB-666-11R-6.0-6.5 6 - 6.5 11/29/2021	PB-666-12 PB-666-12-SS01 2.5 - 3 5/18/2021	PB-666-12R PB-666-12R-0.0-0.5 0 - 0.5 11/29/2021	PB-666-12R PB-666-12R-6.0-6.5 6 - 6.5 11/29/2021
Volatile Organic Compounds												
Benzene	280	330	0.5	0.13	0.002 (0.00074)	0.0017 (0.00092)	*3.6 (0.058)*	0.0013 (0.00078)	0.00088 (0.00065)	*0.45 (0.061)*	NA	NA
Cumene	10000	10000	2500	2500	0.0002 J (0.0015)	0.00051 J (0.0018)	7.1 (0.12)	NA	NA	1.2 (0.12)	NA	NA
1,2-Dibromoethane	3.7	4.2	0.005	0.0013	ND (0.00074)	ND (0.00092)	ND (0.058)	NA	NA	ND (0.061)	NA	NA
1,2-Dichloroethane	85	98	0.5	0.1	ND (0.0015)	ND (0.0018)	ND (0.12)	NA	NA	ND (0.12)	NA	NA
Ethyl Benzene	880	1000	70	46	ND (0.0015)	ND (0.0018)	0.28 (0.12)	NA	NA	2 (0.12)	NA	NA
Methyl tert-butyl ether	8500	9800	96	1.4	ND (0.0029)	ND (0.0037)	ND (0.23)	NA	NA	ND (0.24)	NA	NA
Toluene	10000	10000	100	44	ND (0.0015)	0.0038 (0.0018)	0.095 J (0.12)	NA	NA	2.6 (0.12)	NA	NA
1,2,4-Trimethylbenzene	4700	5400	300	35	0.00089 J (0.0029)	ND (0.0037)	0.22 J (0.23)	NA	NA	20 (0.24)	NA	NA
1,3,5-Trimethylbenzene	4700	5400	93	210	0.00044 J (0.0029)	ND (0.0037)	0.061 J (0.23)	NA	NA	11 (0.24)	NA	NA
Xylenes (total)	7900	9100	1000	990	0.00173 J (0.0029)	ND (0.0037)	0.368 J (0.23)	NA	NA	24.1 J (0.24)	NA	NA
Semi-Volatile Organic Compound												
Anthracene	190000	190000	350		ND (0.14)	ND (0.4)	41 (4.2)	NA	NA	74 (4.8)	NA	NA
Benzo(a)anthracene	130	190000	340		ND (0.14)	ND (0.4)	130 (4.2)	NA	NA	110 (4.8)	NA	NA
Benzo(a)pyrene	91	190000	46		ND (0.18)	ND (0.53)	140 (4.2)	34 (0.8)	12 (5.2)	90 (4.8)	20 (0.93)	0.25 (0.18)
Benzo(b)fluoranthene	76	190000	170		ND (0.14)	ND (0.4)	170 (4.2)	57 (1.2)	18 (3.9)	120 (4.8)	31 (0.7)	0.32 (0.13)
Benzo(g,h,i)perylene	190000	190000	180		ND (0.18)	ND (0.53)	84 (4.2)	NA	NA	50 (4.8)	NA	NA
Chrysene	760	190000	230		ND (0.14)	ND (0.4)	110 (4.2)	NA	NA	86 (4.8)	NA	NA
Fluorene	130000	190000	3800		ND (0.23)	ND (0.66)	18 (4.2)	NA	NA	53 (4.8)	NA	NA
Naphthalene	66	77	25	25	ND (0.23)	ND (0.66)	1.4 J (4.2)	NA	NA	***160 (4.8)***	0.84 J (1.2)	0.054 J (0.22)
Phenanthrene	190000	190000	10000		ND (0.14)	ND (0.4)	72 (4.2)	NA	NA	270 (4.8)	NA	NA
Pyrene	96000	190000	2200		ND (0.14)	ND (0.4)	180 (4.2)	NA	NA	190 (4.8)	NA	NA
Metals												
Lead	1000	190000	450		9.66 (2.69)	9.14 (2.71)	253 (2.49)	NA	NA	6170 (5.64)	**2460 (2.68)**	307 (2.69)

Notes:
1 All concentrations are presented in mg/kg (ppm). Detection limts are in parentheses.
2 Boldfaced and grey shaded concentrations exceed the Non-Res Direct Contact with Soil MSCs.
4 Underlined concentrations exceed the Non-Res Soil-to-GW MSCs Used Aquifer TDS≤2500.
5 Italicized and blue font concentrations exceed the Non-Res Soil Vapor Intrusion Screening Value.
Abbreviations:
ND -- Not Detected.
NA -- Not Analyzed.
J -- Estimated Concentration.

Table G1
Summary of PESRM Soil Analytical Results
Tank Group 01
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Non-Res Direct Contact with Surface Soil MSCs	Non-Res Direct Contact with Subsurface Soil MSCs	Non-Res Soil-to-GW MSCs Used Aquifer TDS≤2500	Non-Res Soil Vapor Intrusion Screening Value	PB-666-13 PB-666-13-SS01 4.5 - 5 1/17/2022	PB-666-14 PB-666-14-SS01 4 - 4.5 5/18/2021	PB-666-15 PB-666-15-SS01 3.5 - 4 5/18/2021	PB-666-16 PB-666-16-SS01 3 - 3.5 5/18/2021	PB-666-17 PB-666-17-SS01 3.5 - 4 5/18/2021	PB-666-18 PB-666-18-SS01 3 - 3.5 5/18/2021	PB-666-19 PB-666-19-SS01 3 - 3.5 5/18/2021	PB-666-20 PB-666-20-SS01 3.5 - 4 5/18/2021
Volatile Organic Compounds												
Benzene	280	330	0.5	0.13	0.0034 (0.0009)	0.0013 (0.00059)	ND (0.00048)	ND (0.00056)	ND (0.00073)	0.00037 J (0.00077)	ND (0.00067)	*5.8 (0.15)*
Cumene	10000	10000	2500	2500	0.0015 J (0.0018)	0.0011 J (0.0012)	ND (0.00096)	ND (0.0011)	ND (0.0014)	ND (0.0015)	ND (0.0013)	0.81 (0.3)
1,2-Dibromoethane	3.7	4.2	0.005	0.0013	ND (0.0009)	ND (0.00059)	ND (0.00048)	ND (0.00056)	ND (0.00073)	ND (0.00077)	ND (0.00067)	ND (0.15)
1,2-Dichloroethane	85	98	0.5	0.1	ND (0.0018)	ND (0.0012)	ND (0.00096)	ND (0.0011)	ND (0.0014)	ND (0.0015)	ND (0.0013)	ND (0.3)
Ethyl Benzene	880	1000	70	46	ND (0.0018)	0.02 (0.0012)	ND (0.00096)	ND (0.0011)	ND (0.0014)	ND (0.0015)	ND (0.0013)	1.9 (0.3)
Methyl tert-butyl ether	8500	9800	96	1.4	ND (0.0036)	ND (0.0023)	ND (0.0019)	ND (0.0022)	ND (0.0029)	ND (0.0031)	ND (0.0027)	ND (0.61)
Toluene	10000	10000	100	44	ND (0.0018)	0.0023 (0.0012)	ND (0.00096)	ND (0.0011)	ND (0.0014)	ND (0.0015)	0.0013 (0.0013)	*1500 (12)*
1,2,4-Trimethylbenzene	4700	5400	300	35	ND (0.0036)	0.0011 J (0.0023)	ND (0.0019)	ND (0.0022)	ND (0.0029)	ND (0.0031)	ND (0.0027)	6.6 (0.61)
1,3,5-Trimethylbenzene	4700	5400	93	210	ND (0.0036)	0.00048 J (0.0023)	ND (0.0019)	ND (0.0022)	ND (0.0029)	ND (0.0031)	ND (0.0027)	3.5 (0.61)
Xylenes (total)	7900	9100	1000	990	ND (0.0036)	0.09 J (0.0023)	ND (0.0019)	ND (0.0022)	ND (0.0029)	ND (0.0031)	ND (0.0027)	12.3 J (0.61)
Semi-Volatile Organic Compound												
Anthracene	190000	190000	350		ND (0.41)	7.9 (0.42)	0.81 J (5)	4.6 (0.4)	0.089 (0.019)	0.0085 (0.0083)	0.0095 (0.0093)	0.015 (0.0093)
Benzo(a)anthracene	130	190000	340		0.3 J (0.41)	19 (0.42)	15 (5)	18 (0.4)	0.28 (0.019)	0.035 (0.0083)	0.036 (0.0093)	0.018 (0.0093)
Benzo(a)pyrene	91	190000	46		0.57 (0.55)	16 (0.42)	38 (5)	15 (0.4)	0.24 (0.019)	0.029 (0.0083)	0.043 (0.0093)	0.013 (0.0093)
Benzo(b)fluoranthene	76	190000	170		0.91 (0.41)	20 (0.42)	18 (5)	20 (0.4)	0.32 (0.019)	0.031 (0.0083)	0.068 (0.0093)	0.017 (0.0093)
Benzo(g,h,i)perylene	190000	190000	180		1.3 (0.55)	8.1 (0.42)	19 (5)	8.6 (0.4)	0.12 (0.019)	0.016 (0.0083)	0.047 (0.0093)	ND (0.0093)
Chrysene	760	190000	230		0.28 J (0.41)	15 (0.42)	53 (5)	14 (0.4)	0.21 (0.019)	0.045 (0.0083)	0.036 (0.0093)	0.012 (0.0093)
Fluorene	130000	190000	3800		ND (0.69)	3.1 (0.42)	ND (5)	1.3 (0.4)	0.022 (0.019)	0.0032 J (0.0083)	0.002 J (0.0093)	ND (0.0093)
Naphthalene	66	77	25	25	ND (0.69)	1.4 (0.42)	1.8 J (5)	1.8 (0.4)	0.021 (0.019)	0.0022 J (0.0083)	0.0098 (0.0093)	0.034 (0.0093)
Phenanthrene	190000	190000	10000		ND (0.41)	30 (0.42)	1.2 J (5)	17 (0.4)	0.3 (0.019)	0.031 (0.0083)	0.026 (0.0093)	0.051 (0.0093)
Pyrene	96000	190000	2200		0.52 (0.41)	28 (0.42)	47 (5)	25 (0.4)	0.4 (0.019)	0.046 (0.0083)	0.04 (0.0093)	0.027 (0.0093)
Metals												
Lead	1000	190000	450		176 (2.75)	103 (2.42)	784 (2.5)	5200 (4.75)	456 (2.85)	375 (2.45)	60.3 (2.8)	105 (2.7)

Notes:
1 All concentrations are presented in mg/kg (ppm). Detection limts are in parentheses.
2 Boldfaced and grey shaded concentrations exceed the Non-Res Direct Contact with Soil MSCs.
4 Underlined concentrations exceed the Non-Res Soil-to-GW MSCs Used Aquifer TDS≤2500.
5 Italicized and blue font concentrations exceed the Non-Res Soil Vapor Intrusion Screening Value.

Abbreviations:
ND -- Not Detected.
NA -- Not Analyzed.
J -- Estimated Concentration.

Table G1
Summary of PESRM Soil Analytical Results
Tank Group 01
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Non-Res Direct Contact with Surface Soil MSCs	Non-Res Direct Contact with Subsurface Soil MSCs	Non-Res Soil-to-GW MSCs Used Aquifer TDS≤2500	Non-Res Soil Vapor Intrusion Screening Value	PB-666-20R PB-666-20R-0.0-0.5 0 - 0.5 12/1/2021	PB-666-20R PB-666-20R-6.0-6.5 6 - 6.5 12/1/2021	PB-666-21 PB-666-21-SS01 4.5 - 5 5/18/2021	PB-666-21 DUP-01 4.5 - 5 5/18/2021 FD	PB-666-21R PB-666-21R-0.0-0.5 0 - 0.5 12/1/2021	PB-666-21R PB-666-21R-6.0-6.5 6 - 6.5 12/1/2021	PB-666-21R PB-666-21R-14.5-15.0 14.5 - 15 12/1/2021	PB-666-22 PB-666-22-SS01 4.5 - 5 5/18/2021
Volatile Organic Compounds												
Benzene	280	330	0.5	0.13	ND (0.00089)	ND (0.00084)	0.067 J (0.088)	ND (0.00065)	NA	NA	NA	ND (0.0013)
Cumene	10000	10000	2500	2500	NA	NA	ND (0.18)	ND (0.0013)	NA	NA	NA	0.0039 (0.0026)
1,2-Dibromoethane	3.7	4.2	0.005	0.0013	NA	NA	ND (0.088)	ND (0.00065)	NA	NA	NA	ND (0.0013)
1,2-Dichloroethane	85	98	0.5	0.1	NA	NA	ND (0.18)	ND (0.0013)	NA	NA	NA	ND (0.0026)
Ethyl Benzene	880	1000	70	46	NA	NA	0.048 J (0.18)	ND (0.0013)	NA	NA	NA	0.00056 J (0.0026)
Methyl tert-butyl ether	8500	9800	96	1.4	NA	NA	ND (0.35)	ND (0.0026)	NA	NA	NA	ND (0.0053)
Toluene	10000	10000	100	44	0.0043 (0.0018)	0.0062 (0.0017)	0.1 J (0.18)	0.003 (0.0013)	NA	NA	NA	ND (0.0026)
1,2,4-Trimethylbenzene	4700	5400	300	35	NA	NA	0.088 J (0.35)	ND (0.0026)	NA	NA	NA	0.0014 J (0.0053)
1,3,5-Trimethylbenzene	4700	5400	93	210	NA	NA	0.044 J (0.35)	ND (0.0026)	NA	NA	NA	ND (0.0053)
Xylenes (total)	7900	9100	1000	990	NA	NA	0.19 J (0.35)	ND (0.0026)	NA	NA	NA	ND (0.0053)
Semi-Volatile Organic Compound												
Anthracene	190000	190000	350		NA	NA	0.0034 J (0.012)	0.057 (0.0086)	NA	NA	NA	ND (0.06)
Benzo(a)anthracene	130	190000	340		NA	NA	0.031 (0.012)	0.13 (0.0086)	NA	NA	NA	0.59 (0.06)
Benzo(a)pyrene	91	190000	46		NA	NA	0.037 (0.012)	0.11 (0.0086)	NA	NA	NA	0.31 (0.06)
Benzo(b)fluoranthene	76	190000	170		NA	NA	0.061 (0.012)	0.15 (0.0086)	NA	NA	NA	0.17 (0.06)
Benzo(g,h,i)perylene	190000	190000	180		NA	NA	0.032 (0.012)	0.054 (0.0086)	NA	NA	NA	0.11 (0.06)
Chrysene	760	190000	230		NA	NA	0.029 (0.012)	0.089 (0.0086)	NA	NA	NA	0.99 (0.06)
Fluorene	130000	190000	3800		NA	NA	ND (0.012)	0.037 (0.0086)	NA	NA	NA	2.5 (0.06)
Naphthalene	66	77	25	25	NA	NA	0.0034 J (0.012)	0.039 (0.0086)	NA	NA	NA	ND (0.06)
Phenanthrene	190000	190000	10000		NA	NA	0.0063 J (0.012)	0.13 (0.0086)	NA	NA	NA	1.6 (0.06)
Pyrene	96000	190000	2200		NA	NA	0.023 (0.012)	0.15 (0.0086)	NA	NA	NA	1.8 (0.06)
Metals												
Lead	1000	190000	450		NA	NA	16800 (18.2)	12100 (12.8)	**3340 (2.38)**	8990 (9.01)	19.3 (11.8)	89 (3.65)

Notes:
1 All concentrations are presented in mg/kg (ppm). Detection limts are in parentheses.
2 Boldfaced and grey shaded concentrations exceed the Non-Res Direct Contact with Soil MSCs.
4 Underlined concentrations exceed the Non-Res Soil-to-GW MSCs Used Aquifer TDS≤2500.
5 Italicized and blue font concentrations exceed the Non-Res Soil Vapor Intrusion Screening Value.

Abbreviations:
ND -- Not Detected.
NA -- Not Analyzed.
J -- Estimated Concentration.

Table G1
Summary of PESRM Soil Analytical Results
Tank Group 01
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Non-Res Direct Contact with Surface Soil MSCs	Non-Res Direct Contact with Subsurface Soil MSCs	Non-Res Soil-to-GW MSCs Used Aquifer TDS≤2500	Non-Res Soil Vapor Intrusion Screening Value	PB-666-23 PB-666-23-SS01 4.5 - 5 5/19/2021	PB-666-24 PB-666-24-SS01 3.5 - 4 5/19/2021	PB-666-25 PB-666-25-SS01 3 - 3.5 5/19/2021	PB-666-26 PB-666-26-0.0-0.5 0 - 0.5 11/30/2021	PB-666-26 PB-666-26-3.5-4.0 3.5 - 4 11/30/2021	PB-666-26 PB-666-26-6.0-6.5 6 - 6.5 11/30/2021	PB-666-27 PB-666-27-0.0-0.5 0 - 0.5 11/30/2021	PB-666-27 PB-666-27-3.5-4.0 3.5 - 4 11/30/2021
Volatile Organic Compounds												
Benzene	280	330	0.5	0.13	ND (0.00087)	0.0064 (0.0006)	ND (0.00053)	NA	NA	NA	0.00045 J (0.00085)	0.0016 (0.00075)
Cumene	10000	10000	2500	2500	ND (0.0017)	0.003 (0.0012)	ND (0.0011)	NA	NA	NA	NA	NA
1,2-Dibromoethane	3.7	4.2	0.005	0.0013	ND (0.00087)	ND (0.0006)	ND (0.00053)	NA	NA	NA	NA	NA
1,2-Dichloroethane	85	98	0.5	0.1	ND (0.0017)	ND (0.0012)	ND (0.0011)	NA	NA	NA	NA	NA
Ethyl Benzene	880	1000	70	46	ND (0.0017)	0.025 (0.0012)	ND (0.0011)	NA	NA	NA	NA	NA
Methyl tert-butyl ether	8500	9800	96	1.4	ND (0.0035)	ND (0.0024)	ND (0.0021)	NA	NA	NA	NA	NA
Toluene	10000	10000	100	44	ND (0.0017)	0.0032 (0.0012)	ND (0.0011)	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	4700	5400	300	35	ND (0.0035)	0.091 (0.0024)	ND (0.0021)	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	4700	5400	93	210	ND (0.0035)	0.019 (0.0024)	ND (0.0021)	NA	NA	NA	NA	NA
Xylenes (total)	7900	9100	1000	990	ND (0.0035)	0.027 J (0.0024)	ND (0.0021)	NA	NA	NA	NA	NA
Semi-Volatile Organic Compound												
Anthracene	190000	190000	350		0.0046 J (0.0099)	1.5 (0.2)	0.056 (0.0076)	NA	NA	NA	NA	NA
Benzo(a)anthracene	130	190000	340		0.017 (0.0099)	2.3 (0.2)	0.27 (0.0076)	NA	NA	NA	NA	NA
Benzo(a)pyrene	91	190000	46		0.013 (0.0099)	1.6 (0.2)	0.26 (0.0076)	NA	NA	NA	ND (1.1)	0.36 J (0.4)
Benzo(b)fluoranthene	76	190000	170		0.014 (0.0099)	0.85 (0.2)	0.31 (0.0076)	NA	NA	NA	ND (0.86)	0.52 (0.3)
Benzo(g,h,i)perylene	190000	190000	180		0.0074 J (0.0099)	0.61 (0.2)	0.16 (0.0076)	NA	NA	NA	NA	NA
Chrysene	760	190000	230		0.013 (0.0099)	3.3 (0.2)	0.24 (0.0076)	NA	NA	NA	NA	NA
Fluorene	130000	190000	3800		0.0046 J (0.0099)	2.9 (0.2)	0.029 (0.0076)	NA	NA	NA	NA	NA
Naphthalene	66	77	25	25	0.019 (0.0099)	5.7 (0.2)	0.07 (0.0076)	NA	NA	NA	NA	NA
Phenanthrene	190000	190000	10000		0.024 (0.0099)	8 (0.2)	0.2 (0.0076)	NA	NA	NA	NA	NA
Pyrene	96000	190000	2200		0.017 (0.0099)	4.5 (0.2)	0.36 (0.0076)	NA	NA	NA	NA	NA
Metals												
Lead	1000	190000	450		66.3 (2.88)	385 (2.3)	205 (2.31)	21.7 (2.65)	141 (2.76)	21.9 (2.86)	NA	NA

Notes:
1 All concentrations are presented in mg/kg (ppm). Detection limts are in parentheses.
2 Boldfaced and grey shaded concentrations exceed the Non-Res Direct Contact with Soil MSCs.
4 Underlined concentrations exceed the Non-Res Soil-to-GW MSCs Used Aquifer TDS≤2500.
5 Italicized and blue font concentrations exceed the Non-Res Soil Vapor Intrusion Screening Value.

Abbreviations:
ND -- Not Detected.
NA -- Not Analyzed.
J -- Estimated Concentration.

Table G1
Summary of PESRM Soil Analytical Results
Tank Group 01
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Non-Res Direct Contact with Surface Soil MSCs	Non-Res Direct Contact with Subsurface Soil MSCs	Non-Res Soil-to-GW MSCs Used Aquifer TDS≤2500	Non-Res Soil Vapor Intrusion Screening Value	PB-666-27 PB-666-27-6.0-6.5 6 - 6.5 11/30/2021	PB-666-28 PB-666-28-0.0-0.5 0 - 0.5 11/30/2021	PB-666-28 PB-666-28-2.5-3.0 2.5 - 3 11/30/2021	PB-666-28 PB-666-28-6.0-6.5 6 - 6.5 11/30/2021	PB-666-29 PB-666-29-0.0-0.5 0 - 0.5 11/29/2021	PB-666-29 PB-666-29-3.5-4.0 3.5 - 4 11/29/2021	PB-666-29 PB-666-29-6.0-6.5 6 - 6.5 11/29/2021	PB-668-01 PB-668-01-SS01 3 - 3.5 5/19/2021
Volatile Organic Compounds												
Benzene	280	330	0.5	0.13	0.0039 (0.0012)	NA	NA	NA	ND (0.00078)	ND (0.00093)	ND (0.00079)	ND (0.00087)
Cumene	10000	10000	2500	2500	NA	NA	NA	NA	NA	NA	NA	ND (0.0017)
1,2-Dibromoethane	3.7	4.2	0.005	0.0013	NA	NA	NA	NA	NA	NA	NA	ND (0.00087)
1,2-Dichloroethane	85	98	0.5	0.1	NA	NA	NA	NA	NA	NA	NA	ND (0.0017)
Ethyl Benzene	880	1000	70	46	NA	NA	NA	NA	NA	NA	NA	ND (0.0017)
Methyl tert-butyl ether	8500	9800	96	1.4	NA	NA	NA	NA	NA	NA	NA	ND (0.0035)
Toluene	10000	10000	100	44	NA	NA	NA	NA	NA	NA	NA	ND (0.0017)
1,2,4-Trimethylbenzene	4700	5400	300	35	NA	NA	NA	NA	NA	NA	NA	ND (0.0035)
1,3,5-Trimethylbenzene	4700	5400	93	210	NA	NA	NA	NA	NA	NA	NA	0.00045 J (0.0035)
Xylenes (total)	7900	9100	1000	990	NA	NA	NA	NA	NA	NA	NA	ND (0.0035)
Semi-Volatile Organic Compound												
Anthracene	190000	190000	350		NA	NA	NA	NA	NA	NA	NA	0.0089 J (0.0095)
Benzo(a)anthracene	130	190000	340		NA	NA	NA	NA	NA	NA	NA	0.0028 J (0.0095)
Benzo(a)pyrene	91	190000	46		1.4 (0.4)	1 (0.2)	ND (0.2)	ND (0.18)	0.37 (0.19)	1 (0.85)	ND (0.19)	0.0062 J (0.0095)
Benzo(b)fluoranthene	76	190000	170		1.8 (0.3)	1.5 (0.15)	ND (0.15)	ND (0.14)	0.45 (0.14)	1.4 (0.64)	0.051 J (0.14)	0.0073 J (0.0095)
Benzo(g,h,i)perylene	190000	190000	180		NA	NA	NA	NA	NA	NA	NA	0.0054 J (0.0095)
Chrysene	760	190000	230		NA	NA	NA	NA	NA	NA	NA	0.0024 J (0.0095)
Fluorene	130000	190000	3800		NA	NA	NA	NA	NA	NA	NA	0.018 (0.0095)
Naphthalene	66	77	25	25	NA	0.16 J (0.26)	ND (0.26)	ND (0.23)	NA	NA	NA	0.026 (0.0095)
Phenanthrene	190000	190000	10000		NA	NA	NA	NA	NA	NA	NA	0.045 (0.0095)
Pyrene	96000	190000	2200		NA	NA	NA	NA	NA	NA	NA	0.02 (0.0095)
Metals												
Lead	1000	190000	450		NA	392 (3.04)	25.5 (3.05)	34.7 (2.73)	NA	NA	NA	26.9 (2.84)

Notes:
1 All concentrations are presented in mg/kg (ppm). Detection limts are in parentheses.
2 Boldfaced and grey shaded concentrations exceed the Non-Res Direct Contact with Soil MSCs.
4 Underlined concentrations exceed the Non-Res Soil-to-GW MSCs Used Aquifer TDS≤2500.
5 Italicized and blue font concentrations exceed the Non-Res Soil Vapor Intrusion Screening Value.

Abbreviations:
ND -- Not Detected.
NA -- Not Analyzed.
J -- Estimated Concentration.

Table G1
Summary of PESRM Soil Analytical Results
Tank Group 01
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Non-Res Direct Contact with Surface Soil MSCs	Non-Res Direct Contact with Subsurface Soil MSCs	Non-Res Soil-to-GW MSCs Used Aquifer TDS≤2500	Non-Res Soil Vapor Intrusion Screening Value	PB-668-02 PB-668-02-SS01 3 - 3.5 5/19/2021	PB-668-03 PB-668-03-SS01 1.5 - 2 5/19/2021	PB-668-04 PB-668-04-SS01 3 - 3.5 5/19/2021	PB-668-05 PB-668-05-SS01 3 - 3.5 5/19/2021	PB-668-06 PB-668-06-SS01 2.5 - 3 5/19/2021	PB-668-06R PB-668-06R-0.0-0.5 0 - 0.5 11/30/2021	PB-668-06R PB-668-06R-6.0-6.5 6 - 6.5 11/30/2021	PB-668-07 PB-668-07-SS01 3 - 3.5 5/19/2021
Volatile Organic Compounds												
Benzene	280	330	0.5	0.13	ND (0.00074)	ND (0.001)	ND (0.00066)	ND (0.0011)	*0.36 (0.066)*	NA	NA	ND (0.0012)
Cumene	10000	10000	2500	2500	ND (0.0015)	0.00042 J (0.002)	ND (0.0013)	ND (0.0022)	1.5 (0.13)	NA	NA	ND (0.0024)
1,2-Dibromoethane	3.7	4.2	0.005	0.0013	ND (0.00074)	ND (0.001)	ND (0.00066)	ND (0.0011)	ND (0.066)	NA	NA	ND (0.0012)
1,2-Dichloroethane	85	98	0.5	0.1	ND (0.0015)	ND (0.002)	ND (0.0013)	ND (0.0022)	ND (0.13)	NA	NA	ND (0.0024)
Ethyl Benzene	880	1000	70	46	ND (0.0015)	0.00084 J (0.002)	ND (0.0013)	ND (0.0022)	1.3 (0.13)	NA	NA	ND (0.0024)
Methyl tert-butyl ether	8500	9800	96	1.4	ND (0.003)	ND (0.0041)	ND (0.0026)	ND (0.0044)	ND (0.26)	NA	NA	ND (0.0048)
Toluene	10000	10000	100	44	ND (0.0015)	ND (0.002)	ND (0.0013)	ND (0.0022)	2.7 (0.13)	NA	NA	ND (0.0024)
1,2,4-Trimethylbenzene	4700	5400	300	35	0.012 (0.003)	0.0078 (0.0041)	ND (0.0026)	ND (0.0044)	*38 (0.26)*	NA	NA	ND (0.0048)
1,3,5-Trimethylbenzene	4700	5400	93	210	0.006 (0.003)	0.012 (0.0041)	ND (0.0026)	ND (0.0044)	13 (0.26)	NA	NA	ND (0.0048)
Xylenes (total)	7900	9100	1000	990	0.0035 J (0.003)	0.0082 J (0.0041)	ND (0.0026)	ND (0.0044)	13 J (0.26)	NA	NA	ND (0.0048)
Semi-Volatile Organic Compound												
Anthracene	190000	190000	350		0.0077 J (0.012)	0.35 (0.2)	0.003 J (0.0074)	ND (0.047)	58 (3.9)	NA	NA	ND (0.048)
Benzo(a)anthracene	130	190000	340		0.046 (0.012)	0.18 J (0.2)	0.01 (0.0074)	0.0068 J (0.047)	120 (3.9)	NA	NA	0.0051 J (0.048)
Benzo(a)pyrene	91	190000	46		0.04 (0.012)	0.13 J (0.2)	0.011 (0.0074)	ND (0.047)	76 (3.9)	0.94 (0.4)	ND (0.19)	ND (0.048)
Benzo(b)fluoranthene	76	190000	170		0.055 (0.012)	0.14 J (0.2)	0.017 (0.0074)	0.0052 J (0.047)	120 (3.9)	1.3 (0.3)	0.043 J (0.14)	ND (0.048)
Benzo(g,h,i)perylene	190000	190000	180		0.026 (0.012)	0.09 J (0.2)	0.013 (0.0074)	ND (0.047)	48 (3.9)	NA	NA	ND (0.048)
Chrysene	760	190000	230		0.039 (0.012)	0.27 (0.2)	0.01 (0.0074)	0.0045 J (0.047)	90 (3.9)	NA	NA	ND (0.048)
Fluorene	130000	190000	3800		0.0022 J (0.012)	0.58 (0.2)	0.0011 J (0.0074)	ND (0.047)	25 (3.9)	NA	NA	ND (0.048)
Naphthalene	66	77	25	25	0.25 (0.012)	0.14 J (0.2)	0.012 (0.0074)	0.053 (0.047)	***150 (3.9)***	0.15 J (0.5)	ND (0.24)	ND (0.048)
Phenanthrene	190000	190000	10000		0.034 (0.012)	0.86 (0.2)	0.0096 (0.0074)	0.0082 J (0.047)	320 (3.9)	NA	NA	ND (0.048)
Pyrene	96000	190000	2200		0.059 (0.012)	0.65 (0.2)	0.015 (0.0074)	0.0052 J (0.047)	190 (3.9)	NA	NA	ND (0.048)
Metals												
Lead	1000	190000	450		1600 (3.75)	483 (2.8)	192 (2.22)	156 (2.86)	195 (2.87)	NA	NA	87 (2.85)

Notes:
1 All concentrations are presented in mg/kg (ppm). Detection limts are in parentheses.
2 Boldfaced and grey shaded concentrations exceed the Non-Res Direct Contact with Soil MSCs.
4 Underlined concentrations exceed the Non-Res Soil-to-GW MSCs Used Aquifer TDS≤2500.
5 Italicized and blue font concentrations exceed the Non-Res Soil Vapor Intrusion Screening Value.

Abbreviations:
ND -- Not Detected.
NA -- Not Analyzed.
J -- Estimated Concentration.

Table G1
Summary of PESRM Soil Analytical Results
Tank Group 01
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Non-Res Direct Contact with Surface Soil MSCs	Non-Res Direct Contact with Subsurface Soil MSCs	Non-Res Soil-to-GW MSCs Used Aquifer TDS≤2500	Non-Res Soil Vapor Intrusion Screening Value	PB-668-08 PB-668-08-0.0-0.5 0 - 0.5 11/30/2021	PB-668-08 PB-668-08-2.5-3.0 2.5 - 3 11/30/2021	PB-668-08 PB-668-08-6.0-6.5 6 - 6.5 11/30/2021	PB-672-01 PB-672-01-SS01 3 - 3.5 5/20/2021	PB-672-02 PB-672-02-SS01 3 - 3.5 5/20/2021	PB-672-03 PB-672-03-SS01 3 - 3.5 5/20/2021	PB-672-04 PB-672-04-SS01 3 - 3.5 5/20/2021	PB-672-05 PB-672-05-SS01 3 - 3.5 5/20/2021
Volatile Organic Compounds												
Benzene	280	330	0.5	0.13	NA	NA	NA	ND (0.00051)	ND (0.0005)	ND (0.00058)	ND (0.00043)	ND (0.0006)
Cumene	10000	10000	2500	2500	NA	NA	NA	ND (0.001)	ND (0.001)	ND (0.0012)	ND (0.00086)	ND (0.0012)
1,2-Dibromoethane	3.7	4.2	0.005	0.0013	NA	NA	NA	ND (0.00051)	ND (0.0005)	ND (0.00058)	ND (0.00043)	ND (0.0006)
1,2-Dichloroethane	85	98	0.5	0.1	NA	NA	NA	ND (0.001)	ND (0.001)	ND (0.0012)	ND (0.00086)	ND (0.0012)
Ethyl Benzene	880	1000	70	46	NA	NA	NA	ND (0.001)	ND (0.001)	ND (0.0012)	ND (0.00086)	ND (0.0012)
Methyl tert-butyl ether	8500	9800	96	1.4	NA	NA	NA	ND (0.002)	ND (0.002)	ND (0.0023)	ND (0.0017)	ND (0.0024)
Toluene	10000	10000	100	44	NA	NA	NA	ND (0.001)	ND (0.001)	ND (0.0012)	ND (0.00086)	ND (0.0012)
1,2,4-Trimethylbenzene	4700	5400	300	35	NA	NA	NA	ND (0.002)	ND (0.002)	ND (0.0023)	ND (0.0017)	ND (0.0024)
1,3,5-Trimethylbenzene	4700	5400	93	210	NA	NA	NA	ND (0.002)	ND (0.002)	ND (0.0023)	ND (0.0017)	ND (0.0024)
Xylenes (total)	7900	9100	1000	990	NA	NA	NA	ND (0.002)	ND (0.002)	ND (0.0023)	ND (0.0017)	ND (0.0024)
Semi-Volatile Organic Compound												
Anthracene	190000	190000	350		NA	NA	NA	0.054 (0.0075)	0.53 (0.076)	3.8 (0.2)	0.017 (0.0078)	0.071 (0.038)
Benzo(a)anthracene	130	190000	340		NA	NA	NA	0.2 (0.0075)	2 (0.076)	7.9 (0.2)	0.094 (0.0078)	0.8 (0.038)
Benzo(a)pyrene	91	190000	46		3.8 (0.52)	3.7 (0.28)	ND (0.39)	0.18 (0.0075)	1.7 (0.076)	6.5 (0.2)	0.083 (0.0078)	0.78 (0.038)
Benzo(b)fluoranthene	76	190000	170		5.1 (0.39)	4.9 (0.21)	0.24 J (0.29)	0.25 (0.0075)	2.2 (0.076)	8.1 (0.2)	0.1 (0.0078)	0.92 (0.038)
Benzo(g,h,i)perylene	190000	190000	180		NA	NA	NA	0.12 (0.0075)	1 (0.076)	3.3 (0.2)	0.042 (0.0078)	0.45 (0.038)
Chrysene	760	190000	230		NA	NA	NA	0.15 (0.0075)	1.8 (0.076)	6.6 (0.2)	0.068 (0.0078)	0.64 (0.038)
Fluorene	130000	190000	3800		NA	NA	NA	0.017 (0.0075)	0.14 (0.076)	1.8 (0.2)	0.0035 J (0.0078)	0.0089 J (0.038)
Naphthalene	66	77	25	25	0.54 J (0.64)	0.32 J (0.36)	0.51 (0.49)	0.0068 J (0.0075)	0.035 J (0.076)	2.4 (0.2)	0.011 (0.0078)	ND (0.038)
Phenanthrene	190000	190000	10000		NA	NA	NA	0.21 (0.0075)	2.9 (0.076)	15 (0.2)	0.078 (0.0078)	0.099 (0.038)
Pyrene	96000	190000	2200		NA	NA	NA	0.28 (0.0075)	3.7 (0.076)	14 (0.2)	0.12 (0.0078)	1.1 (0.038)
Metals												
Lead	1000	190000	450		NA	NA	NA	52.1 (2.28)	16.8 (2.26)	23.4 (2.31)	12.1 (2.21)	14.4 (2.3)

Notes:
1 All concentrations are presented in mg/kg (ppm). Detection limts are in parentheses.
2 Boldfaced and grey shaded concentrations exceed the Non-Res Direct Contact with Soil MSCs.
4 Underlined concentrations exceed the Non-Res Soil-to-GW MSCs Used Aquifer TDS≤2500.
5 Italicized and blue font concentrations exceed the Non-Res Soil Vapor Intrusion Screening Value.

Abbreviations:
ND -- Not Detected.
NA -- Not Analyzed.
J -- Estimated Concentration.

Table G1
Summary of PESRM Soil Analytical Results
Tank Group 01
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Non-Res Direct Contact with Surface Soil MSCs	Non-Res Direct Contact with Subsurface Soil MSCs	Non-Res Soil-to-GW MSCs Used Aquifer TDS≤2500	Non-Res Soil Vapor Intrusion Screening Value	PB-672-06 PB-672-06-SS01 4.5 - 5 5/20/2021	PB-672-07 PB-672-07-SS01 3 - 3.5 5/20/2021	PB-672-08 PB-672-08-SS01 3 - 3.5 5/20/2021	PB-672-09 PB-672-09-SS01 3 - 3.5 5/20/2021	PB-672-10 PB-672-10-SS01 3 - 3.5 5/20/2021	PB-672-11 PB-672-11-SS01 3.5 - 4 5/20/2021	PB-672-12 PB-672-12-SS01 4.5 - 5 5/20/2021	PB-672-13 PB-672-13-SS01 4.5 - 5 5/20/2021
Volatile Organic Compounds												
Benzene	280	330	0.5	0.13	ND (0.00048)	ND (0.00074)	ND (0.00051)	ND (0.00047)	ND (0.00049)	0.00043 (0.00043)	ND (0.00054)	ND (0.00063)
Cumene	10000	10000	2500	2500	ND (0.00096)	ND (0.0015)	ND (0.001)	ND (0.00094)	ND (0.00097)	ND (0.00086)	ND (0.0011)	0.00026 J (0.0013)
1,2-Dibromoethane	3.7	4.2	0.005	0.0013	ND (0.00048)	ND (0.00074)	ND (0.00051)	ND (0.00047)	ND (0.00049)	ND (0.00043)	ND (0.00054)	ND (0.00063)
1,2-Dichloroethane	85	98	0.5	0.1	ND (0.00096)	ND (0.0015)	ND (0.001)	ND (0.00094)	ND (0.00097)	ND (0.00086)	ND (0.0011)	ND (0.0013)
Ethyl Benzene	880	1000	70	46	ND (0.00096)	ND (0.0015)	ND (0.001)	ND (0.00094)	ND (0.00097)	ND (0.00086)	ND (0.0011)	0.00032 J (0.0013)
Methyl tert-butyl ether	8500	9800	96	1.4	ND (0.0019)	ND (0.003)	ND (0.002)	ND (0.0019)	ND (0.0019)	ND (0.0017)	ND (0.0021)	ND (0.0025)
Toluene	10000	10000	100	44	ND (0.00096)	ND (0.0015)	ND (0.001)	ND (0.00094)	ND (0.00097)	ND (0.00086)	ND (0.0011)	ND (0.0013)
1,2,4-Trimethylbenzene	4700	5400	300	35	ND (0.0019)	ND (0.003)	ND (0.002)	ND (0.0019)	ND (0.0019)	ND (0.0017)	ND (0.0021)	0.0028 (0.0025)
1,3,5-Trimethylbenzene	4700	5400	93	210	ND (0.0019)	ND (0.003)	ND (0.002)	ND (0.0019)	ND (0.0019)	ND (0.0017)	ND (0.0021)	0.0011 J (0.0025)
Xylenes (total)	7900	9100	1000	990	ND (0.0019)	ND (0.003)	ND (0.002)	ND (0.0019)	ND (0.0019)	ND (0.0017)	ND (0.0021)	0.00174 J (0.0025)
Semi-Volatile Organic Compound												
Anthracene	190000	190000	350		0.00098 J (0.0076)	0.014 (0.0077)	0.68 (0.039)	0.0021 J (0.0078)	ND (0.0076)	ND (0.016)	0.08 (0.0076)	0.14 J (0.15)
Benzo(a)anthracene	130	190000	340		0.0013 J (0.0076)	0.16 (0.0077)	1.4 (0.039)	0.013 (0.0078)	0.0015 J (0.0076)	0.0061 J (0.016)	0.24 (0.0076)	0.47 (0.15)
Benzo(a)pyrene	91	190000	46		0.0011 J (0.0076)	0.15 (0.0077)	1.1 (0.039)	0.023 (0.0078)	0.0022 J (0.0076)	0.0054 J (0.016)	0.22 (0.0076)	0.48 (0.15)
Benzo(b)fluoranthene	76	190000	170		0.0016 J (0.0076)	0.21 (0.0077)	1.2 (0.039)	0.032 (0.0078)	0.0032 J (0.0076)	0.0069 J (0.016)	0.28 (0.0076)	0.58 (0.15)
Benzo(g,h,i)perylene	190000	190000	180		0.0017 J (0.0076)	0.1 (0.0077)	0.58 (0.039)	0.023 (0.0078)	0.0046 J (0.0076)	0.0031 J (0.016)	0.11 (0.0076)	0.27 (0.15)
Chrysene	760	190000	230		0.00087 J (0.0076)	0.13 (0.0077)	1.2 (0.039)	0.012 (0.0078)	0.00096 J (0.0076)	0.0048 J (0.016)	0.18 (0.0076)	0.4 (0.15)
Fluorene	130000	190000	3800		0.001 J (0.0076)	0.0012 J (0.0077)	0.19 (0.039)	ND (0.0078)	ND (0.0076)	ND (0.016)	0.059 (0.0076)	0.73 (0.15)
Naphthalene	66	77	25	25	ND (0.0076)	0.0037 J (0.0077)	0.02 J (0.039)	0.0023 J (0.0078)	ND (0.0076)	ND (0.016)	0.044 (0.0076)	8.1 (0.15)
Phenanthrene	190000	190000	10000		0.0045 J (0.0076)	0.058 (0.0077)	2.6 (0.039)	0.0018 J (0.0078)	0.00084 J (0.0076)	0.0039 J (0.016)	0.34 (0.0076)	0.58 (0.15)
Pyrene	96000	190000	2200		0.0025 J (0.0076)	0.22 (0.0077)	2.7 (0.039)	0.012 (0.0078)	0.0011 J (0.0076)	0.0076 J (0.016)	0.33 (0.0076)	0.62 (0.15)
Metals												
Lead	1000	190000	450		16.6 (2.23)	20.4 (2.24)	22.8 (2.33)	24.5 (2.22)	20.7 (2.26)	16.2 (2.35)	133 (2.28)	14.2 (2.3)

Notes:
1 All concentrations are presented in mg/kg (ppm). Detection limts are in parentheses.
2 Boldfaced and grey shaded concentrations exceed the Non-Res Direct Contact with Soil MSCs.
4 Underlined concentrations exceed the Non-Res Soil-to-GW MSCs Used Aquifer TDS≤2500.
5 Italicized and blue font concentrations exceed the Non-Res Soil Vapor Intrusion Screening Value.

Abbreviations:
ND -- Not Detected.
NA -- Not Analyzed.
J -- Estimated Concentration.

Table G1
Summary of PESRM Soil Analytical Results
Tank Group 01
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Non-Res Direct Contact with Surface Soil MSCs	Non-Res Direct Contact with Subsurface Soil MSCs	Non-Res Soil-to-GW MSCs Used Aquifer TDS≤2500	Non-Res Soil Vapor Intrusion Screening Value	PB-672-14 PB-672-14-SS01 4.5 - 5 5/20/2021	PB-672-15 PB-672-15-SS01 3 - 3.5 5/20/2021	PB-672-16 PB-672-16-SS01 3 - 3.5 5/20/2021	PB-672-17 PB-672-17-SS01 3 - 3.5 5/20/2021	PB-672-18 PB-672-18-SS01 3 - 3.5 5/20/2021	PB-672-19 PB-672-19-SS01 3 - 3.5 5/20/2021	PB-672-20 PB-672-20-SS01 4.5 - 5 5/20/2021	PB-672-21 PB-672-21-SS01 2 - 2.5 5/20/2021
Volatile Organic Compounds												
Benzene	280	330	0.5	0.13	ND (0.00058)	ND (0.00049)	ND (0.00044)	ND (0.0005)	ND (0.00065)	ND (0.00048)	ND (0.00056)	0.0014 (0.00052)
Cumene	10000	10000	2500	2500	ND (0.0012)	ND (0.00098)	ND (0.00088)	ND (0.001)	ND (0.0013)	ND (0.00096)	ND (0.0011)	ND (0.001)
1,2-Dibromoethane	3.7	4.2	0.005	0.0013	ND (0.00058)	ND (0.00049)	ND (0.00044)	ND (0.0005)	ND (0.00065)	ND (0.00048)	ND (0.00056)	ND (0.00052)
1,2-Dichloroethane	85	98	0.5	0.1	ND (0.0012)	ND (0.00098)	ND (0.00088)	ND (0.001)	ND (0.0013)	ND (0.00096)	ND (0.0011)	ND (0.001)
Ethyl Benzene	880	1000	70	46	ND (0.0012)	ND (0.00098)	ND (0.00088)	ND (0.001)	ND (0.0013)	ND (0.00096)	ND (0.0011)	0.00029 J (0.001)
Methyl tert-butyl ether	8500	9800	96	1.4	ND (0.0023)	ND (0.002)	ND (0.0018)	ND (0.002)	ND (0.0026)	ND (0.0019)	ND (0.0022)	ND (0.0021)
Toluene	10000	10000	100	44	ND (0.0012)	ND (0.00098)	ND (0.00088)	ND (0.001)	ND (0.0013)	ND (0.00096)	ND (0.0011)	0.0019 (0.001)
1,2,4-Trimethylbenzene	4700	5400	300	35	ND (0.0023)	ND (0.002)	ND (0.0018)	ND (0.002)	ND (0.0026)	ND (0.0019)	ND (0.0022)	ND (0.0021)
1,3,5-Trimethylbenzene	4700	5400	93	210	ND (0.0023)	ND (0.002)	ND (0.0018)	ND (0.002)	ND (0.0026)	ND (0.0019)	ND (0.0022)	ND (0.0021)
Xylenes (total)	7900	9100	1000	990	ND (0.0023)	ND (0.002)	ND (0.0018)	ND (0.002)	ND (0.0026)	ND (0.0019)	ND (0.0022)	0.00177 J (0.0021)
Semi-Volatile Organic Compound												
Anthracene	190000	190000	350		0.073 (0.015)	0.0076 J (0.0079)	0.00082 J (0.0078)	0.028 (0.0081)	0.013 (0.0083)	0.001 J (0.008)	2.5 (0.16)	0.0044 J (0.0077)
Benzo(a)anthracene	130	190000	340		0.24 (0.015)	0.036 (0.0079)	0.0045 J (0.0078)	0.11 (0.0081)	0.069 (0.0083)	0.0069 J (0.008)	7 (0.16)	0.02 (0.0077)
Benzo(a)pyrene	91	190000	46		0.24 (0.015)	0.03 (0.0079)	0.0029 J (0.0078)	0.086 (0.0081)	0.056 (0.0083)	0.0053 J (0.008)	4.6 (0.16)	0.022 (0.0077)
Benzo(b)fluoranthene	76	190000	170		0.26 (0.015)	0.042 (0.0079)	0.0043 J (0.0078)	0.11 (0.0081)	0.068 (0.0083)	0.0068 J (0.008)	6 (0.16)	0.024 (0.0077)
Benzo(g,h,i)perylene	190000	190000	180		0.12 (0.015)	0.015 (0.0079)	0.002 J (0.0078)	0.054 (0.0081)	0.036 (0.0083)	0.0038 J (0.008)	1.9 (0.16)	0.017 (0.0077)
Chrysene	760	190000	230		0.16 (0.015)	0.032 (0.0079)	0.0036 J (0.0078)	0.088 (0.0081)	0.057 (0.0083)	0.0048 J (0.008)	5.1 (0.16)	0.019 (0.0077)
Fluorene	130000	190000	3800		0.039 (0.015)	0.002 J (0.0079)	ND (0.0078)	0.011 (0.0081)	0.0039 J (0.0083)	ND (0.008)	0.66 (0.16)	0.0042 J (0.0077)
Naphthalene	66	77	25	25	0.028 (0.015)	0.005 J (0.0079)	0.0019 J (0.0078)	0.011 (0.0081)	0.05 (0.0083)	0.0017 J (0.008)	0.15 J (0.16)	0.0069 J (0.0077)
Phenanthrene	190000	190000	10000		0.22 (0.015)	0.026 (0.0079)	0.0035 J (0.0078)	0.12 (0.0081)	0.041 (0.0083)	0.0049 J (0.008)	6.7 (0.16)	0.02 (0.0077)
Pyrene	96000	190000	2200		0.3 (0.015)	0.048 (0.0079)	0.0055 J (0.0078)	0.18 (0.0081)	0.086 (0.0083)	0.01 (0.008)	8.8 (0.16)	0.03 (0.0077)
Metals												
Lead	1000	190000	450		128 (2.29)	18.1 (2.31)	34.5 (2.29)	80.6 (2.41)	21.3 (2.42)	21.1 (2.27)	45.4 (2.28)	15.2 (2.2)

Notes:
1 All concentrations are presented in mg/kg (ppm). Detection limts are in parentheses.
2 Boldfaced and grey shaded concentrations exceed the Non-Res Direct Contact with Soil MSCs.
4 Underlined concentrations exceed the Non-Res Soil-to-GW MSCs Used Aquifer TDS≤2500.
5 Italicized and blue font concentrations exceed the Non-Res Soil Vapor Intrusion Screening Value.

Abbreviations:
ND -- Not Detected.
NA -- Not Analyzed.
J -- Estimated Concentration.

Table G1
Summary of PESRM Soil Analytical Results
Tank Group 01
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Non-Res Direct Contact with Surface Soil MSCs	Non-Res Direct Contact with Subsurface Soil MSCs	Non-Res Soil-to-GW MSCs Used Aquifer TDS≤2500	Non-Res Soil Vapor Intrusion Screening Value	PB-672-22 PB-672-22-SS01 1 - 1.5 5/20/2021	PB-672-23 PB-672-23-SS01 2 - 2.5 5/21/2021
Volatile Organic Compounds						
Benzene	280	330	0.5	0.13	ND (0.00057)	0.00082 J (0.00089)
Cumene	10000	10000	2500	2500	ND (0.0011)	ND (0.0018)
1,2-Dibromoethane	3.7	4.2	0.005	0.0013	ND (0.00057)	ND (0.00089)
1,2-Dichloroethane	85	98	0.5	0.1	ND (0.0011)	ND (0.0018)
Ethyl Benzene	880	1000	70	46	ND (0.0011)	ND (0.0018)
Methyl tert-butyl ether	8500	9800	96	1.4	ND (0.0023)	ND (0.0036)
Toluene	10000	10000	100	44	ND (0.0011)	ND (0.0018)
1,2,4-Trimethylbenzene	4700	5400	300	35	0.0008 J (0.0023)	ND (0.0036)
1,3,5-Trimethylbenzene	4700	5400	93	210	0.001 J (0.0028)	ND (0.0036)
Xylenes (total)	7900	9100	1000	990	0.00172 J (0.0023)	ND (0.0036)
Semi-Volatile Organic Compound						
Anthracene	190000	190000	350		0.23 (0.04)	0.034 J (0.094)
Benzo(a)anthracene	130	190000	340		1.5 (0.04)	0.28 (0.094)
Benzo(a)pyrene	91	190000	46		1.3 (0.04)	0.52 (0.094)
Benzo(b)fluoranthene	76	190000	170		1.5 (0.04)	0.37 (0.094)
Benzo(g,h,i)perylene	190000	190000	180		1 (0.04)	0.56 (0.094)
Chrysene	760	190000	230		1.2 (0.04)	0.43 (0.094)
Fluorene	130000	190000	3800		0.05 (0.04)	0.024 J (0.094)
Naphthalene	66	77	25	25	0.17 (0.04)	0.1 (0.094)
Phenanthrene	190000	190000	10000		0.87 (0.04)	0.16 (0.094)
Pyrene	96000	190000	2200		2 (0.04)	0.2 (0.094)
Metals						
Lead	1000	190000	450		292 (2.37)	153 (2.72)

Notes:
1 All concentrations are presented in mg/kg (ppm). Detection limts are in parentheses.
2 Boldfaced and grey shaded concentrations exceed the Non-Res Direct Contact with Soil MSCs.
4 Underlined concentrations exceed the Non-Res Soil-to-GW MSCs Used Aquifer TDS≤2500.
5 Italicized and blue font concentrations exceed the Non-Res Soil Vapor Intrusion Screening Value.

Abbreviations:
ND -- Not Detected.
NA -- Not Analyzed.
J -- Estimated Concentration.

Table G2
Summary of QAQC Analytical Results
Tank Group 01
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	QAQC	QAQC	QAQC	QAQC	QAQC	QAQC	QAQC	QAQC	QAQC	QAQC	QAQC	QAQC	QAQC
Field Sample ID	FB-210518-1	FB-210518-2	TB-210518	FB-210519-1	FB-210519-2	TB-210519	FB-210520-1	FB-210520-2	FB-210520-3	TB-210520	FB-210521	TB-210521	FB-211129
Sample Date	5/18/2021	5/18/2021	5/18/2021	5/19/2021	5/19/2021	5/19/2021	5/20/2021	5/20/2021	5/20/2021	5/20/2021	5/21/2021	5/21/2021	11/29/2021
Comments	Field Blank	Field Blank	Trip Blank	Field Blank	Field Blank	Trip Blank	Field Blank	Field Blank	Field Blank	Trip Blank	Field Blank	Trip Blank	Field Blank
Volatile Organic Compounds	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Semi-Volatile Organic Compounds													
Anthracene	ND (0.1)	ND (0.1)	NA	ND (0.1)	ND (0.1)	NA	ND (0.1)	ND (0.1)	ND (0.1)	NA	ND (0.1)	NA	NA
Naphthalene	0.09 J (0.1)	ND (0.1)	NA	ND (0.1)	ND (0.1)	NA	ND (0.1)	ND (0.1)	ND (0.1)	NA	ND (0.1)	NA	ND (0.1)
Phenanthrene	ND (0.05)	ND (0.05)	NA	ND (0.05)	ND (0.05)	NA	ND (0.05)	ND (0.05)	ND (0.05)	NA	ND (0.05)	NA	NA
Pyrene	ND (0.1)	ND (0.1)	NA	ND (0.1)	ND (0.1)	NA	ND (0.1)	ND (0.1)	ND (0.1)	NA	ND (0.1)	NA	NA
Metals (Total)	NA	NA	NA	NA	NA	NA	ND	ND	ND	NA	ND	NA	ND
Metals (Dissolved)	ND	ND	NA	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
1 All concentrations are presented in ug/L (ppb). Detection limts are in parentheses.
2 Only compounds with at least one detection are shown.

Abbreviations:
ND -- Not Detected.
NA -- Not Analyzed.
J -- Estimated Concentration.

Table G2
Summary of QAQC Analytical Results
Tank Group 01
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	QAQC	QAQC	QAQC	QAQC	QAQC	QAQC
Field Sample ID	TB-211129	FB-211130-1	FB-211130-2	TB-211130	FB-211201	TB-211201
Sample Date	11/29/2021	11/30/2021	11/30/2021	11/30/2021	12/1/2021	12/1/2021
Comments	Trip Blank	Field Blank	Field Blank	Trip Blank	Field Blank	Trip Blank
Volatile Organic Compounds	ND	ND	ND	ND	ND	ND
Semi-Volatile Organic Compounds						
Anthracene	NA	NA	NA	NA	0.02 J (0.1)	NA
Naphthalene	NA	ND (0.1)	ND (0.1)	NA	ND (0.1)	NA
Phenanthrene	NA	NA	NA	NA	0.03 J (0.05)	NA
Pyrene	NA	NA	NA	NA	0.02 J (0.1)	NA
Metals (Total)	NA	ND	ND	NA	ND	NA
Metals (Dissolved)	NA	NA	NA	NA	NA	NA

Notes:
1 All concentrations are presented in ug/L (ppb). Detection limts are in parentheses.
2 Only compounds with at least one detection are shown.

Abbreviations:
ND -- Not Detected.
NA -- Not Analyzed.
J -- Estimated Concentration.

Appendix H

Laboratory Reports

ANALYTICAL REPORT

Lab Number:	L2126144
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY-AST CLOS
Project Number:	200.00135.005
Report Date:	06/02/21

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005

Lab Number: L2126144
Report Date: 06/02/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2126144-01	PB-666-14-SS01	SOIL	PHILADELPHIA, PA	05/18/21 09:05	05/18/21
L2126144-02	PB-666-12-SS01	SOIL	PHILADELPHIA, PA	05/18/21 09:55	05/18/21
L2126144-03	PB-666-11-SS01	SOIL	PHILADELPHIA, PA	05/18/21 10:05	05/18/21
L2126144-04	PB-666-07-SS01	SOIL	PHILADELPHIA, PA	05/18/21 10:19	05/18/21
L2126144-05	PB-666-04-SS01	SOIL	PHILADELPHIA, PA	05/18/21 10:35	05/18/21
L2126144-06	PB-666-02-SS01	SOIL	PHILADELPHIA, PA	05/18/21 10:50	05/18/21
L2126144-07	PB-666-01-SS01	SOIL	PHILADELPHIA, PA	05/18/21 11:10	05/18/21
L2126144-08	PB-663-11-SS01	SOIL	PHILADELPHIA, PA	05/18/21 11:50	05/18/21
L2126144-09	PB-666-03-SS01	SOIL	PHILADELPHIA, PA	05/18/21 12:05	05/18/21
L2126144-10	PB-666-15-SS01	SOIL	PHILADELPHIA, PA	05/18/21 12:15	05/18/21
L2126144-11	PB-666-16-SS01	SOIL	PHILADELPHIA, PA	05/18/21 12:30	05/18/21
L2126144-12	PB-666-17-SS01	SOIL	PHILADELPHIA, PA	05/18/21 12:45	05/18/21
L2126144-13	PB-666-18-SS01	SOIL	PHILADELPHIA, PA	05/18/21 13:20	05/18/21
L2126144-14	PB-666-19-SS01	SOIL	PHILADELPHIA, PA	05/18/21 13:35	05/18/21
L2126144-15	PB-666-20-SS01	SOIL	PHILADELPHIA, PA	05/18/21 13:50	05/18/21
L2126144-16	PB-666-21-SS01	SOIL	PHILADELPHIA, PA	05/18/21 14:00	05/18/21
L2126144-17	PB-666-22-SS01	SOIL	PHILADELPHIA, PA	05/18/21 14:40	05/18/21
L2126144-18	DUP-01	SOIL	PHILADELPHIA, PA	05/18/21 14:05	05/18/21
L2126144-19	FB-210518-1	WATER	PHILADELPHIA, PA	05/18/21 14:45	05/18/21
L2126144-20	FB-210518-2	WATER	PHILADELPHIA, PA	05/18/21 14:50	05/18/21
L2126144-21	TB-210518	WATER	PHILADELPHIA, PA	05/18/21 00:00	05/18/21

Project Name:	PHILADELPHIA REFINERY-AST CLOS	**Lab Number:**	L2126144
Project Number:	200.00135.005	**Report Date:**	06/02/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	PHILADELPHIA REFINERY-AST CLOS	**Lab Number:**	L2126144
Project Number:	200.00135.005	**Report Date:**	06/02/21

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Sample Receipt

The analyses performed were specified by the client.

L2126144-01: The collection date and time on the chain of custody was 18-MAY-21 09:05; however, the collection date/time on the container label was 18-MAY-21 09:15. At the client's request, the collection date/time is reported as 18-MAY-21 09:05.

L2126144-08: The sample identified as "PB-666-11-SS01" on the chain of custody was identified as "PB-663-11-SS01" on the container label. At the client's request, the sample is reported as "PB-663-11-SS01".

L2126144-21: At the client's request, the Trip Blank was analyzed.

Volatile Organics

L2126144-05: The sample was analyzed as a High Level Methanol based upon screen results. The sample was then analyzed as a Low Level in order to achieve lower reporting limits. The results of both analyses are reported. Differences were noted between the results of the analyses which have been attributed to vial discrepancies.

L2126144-16: The internal standard (IS) response for 1,4-dichlorobenzene-d4 (38%) and the surrogate recovery for 4-bromofluorobenzene (159%) were outside the acceptance criteria in the low-level analysis. A second low-level vial was analyzed, but yielded no internal standard recoveries. Since the IS response was below method criteria, all associated compounds and surrogate recoveries are considered to have a potentially high bias. A high-level analysis was performed, and those results are also reported.

L2126144-21: The pH of the sample was greater than two; however, the sample was analyzed within the method required holding time.

Project Name:	PHILADELPHIA REFINERY-AST CLOS	**Lab Number:**	L2126144
Project Number:	200.00135.005	**Report Date:**	06/02/21

Case Narrative (continued)

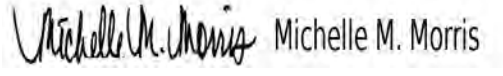
Semivolatile Organics by SIM

L2126144-01D, -02D, -03D, -06D, -08D, -10D, and -11D: The surrogate recoveries are below the acceptance criteria for nitrobenzene-d5 (0%), 2-fluorobiphenyl (0%), and 4-terphenyl-d14 (0%) due to the dilution required to quantitate the sample. Re-extraction was not required; therefore, the results of the original analysis are reported.

L2126144-03D, -04D, -05D, -07D, -12D, and -17D: The sample has elevated detection limits due to the dilution required by the sample matrix.

L2126144-06D and -10D: The sample has elevated detection limits due to the dilution required by the matrix interferences encountered during the concentration of the sample and the analytical dilution required by the sample matrix.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Michelle M. Morris

Title: Technical Director/Representative Date: 06/02/21

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126144

Project Number: 200.00135.005 **Report Date:** 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-01
Client ID: PB-666-14-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 09:05
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/20/21 17:44
Analyst: MV
Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00024	1
Benzene	0.0013		mg/kg	0.00059	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	0.0023		mg/kg	0.0012	0.00064	1
1,2-Dibromoethane	ND		mg/kg	0.00059	0.00034	1
Ethylbenzene	0.020		mg/kg	0.0012	0.00016	1
p/m-Xylene	0.066		mg/kg	0.0023	0.00066	1
o-Xylene	0.024		mg/kg	0.0012	0.00034	1
Xylenes, Total	0.090		mg/kg	0.0012	0.00034	1
Isopropylbenzene	0.0011	J	mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	0.00048	J	mg/kg	0.0023	0.00023	1
1,2,4-Trimethylbenzene	0.0011	J	mg/kg	0.0023	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	119		70-130
Dibromofluoromethane	91		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126144

Project Number: 200.00135.005 **Report Date:** 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-02
Client ID: PB-666-12-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 09:55
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/20/21 23:36
Analyst: MV
Percent Solids: 69%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.24	0.024	1
Benzene	0.45		mg/kg	0.061	0.020	1
1,2-Dichloroethane	ND		mg/kg	0.12	0.031	1
Toluene	2.6		mg/kg	0.12	0.066	1
1,2-Dibromoethane	ND		mg/kg	0.061	0.036	1
Ethylbenzene	2.0		mg/kg	0.12	0.017	1
p/m-Xylene	16.		mg/kg	0.24	0.068	1
o-Xylene	8.1		mg/kg	0.12	0.036	1
Xylenes, Total	24.		mg/kg	0.12	0.036	1
Isopropylbenzene	1.2		mg/kg	0.12	0.013	1
1,3,5-Trimethylbenzene	11.		mg/kg	0.24	0.024	1
1,2,4-Trimethylbenzene	20.		mg/kg	0.24	0.041	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	118		70-130
Dibromofluoromethane	90		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126144

Project Number: 200.00135.005 **Report Date:** 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-03 Date Collected: 05/18/21 10:05
Client ID: PB-666-11-SS01 Date Received: 05/18/21
Sample Location: PHILADELPHIA, PA Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/20/21 22:46
Analyst: MV
Percent Solids: 78%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.23	0.023	1
Benzene	3.6		mg/kg	0.058	0.019	1
1,2-Dichloroethane	ND		mg/kg	0.12	0.030	1
Toluene	0.095	J	mg/kg	0.12	0.063	1
1,2-Dibromoethane	ND		mg/kg	0.058	0.034	1
Ethylbenzene	0.28		mg/kg	0.12	0.016	1
p/m-Xylene	0.29		mg/kg	0.23	0.065	1
o-Xylene	0.078	J	mg/kg	0.12	0.034	1
Xylenes, Total	0.37	J	mg/kg	0.12	0.034	1
Isopropylbenzene	7.1		mg/kg	0.12	0.013	1
1,3,5-Trimethylbenzene	0.061	J	mg/kg	0.23	0.022	1
1,2,4-Trimethylbenzene	0.22	J	mg/kg	0.23	0.039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	119		70-130
Dibromofluoromethane	90		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126144

Project Number: 200.00135.005 **Report Date:** 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-04
Client ID: PB-666-07-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 10:19
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/23/21 20:57
Analyst: JC
Percent Solids: 68%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.23	0.023	1
Benzene	ND		mg/kg	0.058	0.019	1
1,2-Dichloroethane	ND		mg/kg	0.12	0.030	1
Toluene	ND		mg/kg	0.12	0.063	1
1,2-Dibromoethane	ND		mg/kg	0.058	0.034	1
Ethylbenzene	0.041	J	mg/kg	0.12	0.016	1
p/m-Xylene	0.15	J	mg/kg	0.23	0.065	1
o-Xylene	0.62		mg/kg	0.12	0.034	1
Xylenes, Total	0.77	J	mg/kg	0.12	0.034	1
Isopropylbenzene	0.15		mg/kg	0.12	0.013	1
1,3,5-Trimethylbenzene	5.5		mg/kg	0.23	0.022	1
1,2,4-Trimethylbenzene	6.4		mg/kg	0.23	0.039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	119		70-130
Dibromofluoromethane	92		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126144

Project Number: 200.00135.005 **Report Date:** 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-05
Client ID: PB-666-04-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 10:35
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/20/21 23:11
Analyst: MV
Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.10	0.010	1
Benzene	0.015	J	mg/kg	0.025	0.0083	1
1,2-Dichloroethane	ND		mg/kg	0.050	0.013	1
Toluene	0.057		mg/kg	0.050	0.027	1
1,2-Dibromoethane	ND		mg/kg	0.025	0.015	1
Ethylbenzene	0.052		mg/kg	0.050	0.0070	1
p/m-Xylene	0.27		mg/kg	0.10	0.028	1
o-Xylene	0.18		mg/kg	0.050	0.014	1
Xylenes, Total	0.45		mg/kg	0.050	0.014	1
Isopropylbenzene	0.024	J	mg/kg	0.050	0.0054	1
1,3,5-Trimethylbenzene	0.61		mg/kg	0.10	0.0096	1
1,2,4-Trimethylbenzene	1.3		mg/kg	0.10	0.017	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	118		70-130
Dibromofluoromethane	92		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126144

Project Number: 200.00135.005 **Report Date:** 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-05
Client ID: PB-666-04-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 10:35
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/21/21 23:40
Analyst: NLK
Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00025	1
Benzene	0.00023	J	mg/kg	0.00061	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00032	1
Toluene	0.00098	J	mg/kg	0.0012	0.00066	1
1,2-Dibromoethane	ND		mg/kg	0.00061	0.00036	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00069	1
o-Xylene	0.00045	J	mg/kg	0.0012	0.00036	1
Xylenes, Total	0.00045	J	mg/kg	0.0012	0.00036	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	0.00043	J	mg/kg	0.0024	0.00024	1
1,2,4-Trimethylbenzene	0.00094	J	mg/kg	0.0024	0.00041	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	120		70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126144

Project Number: 200.00135.005 **Report Date:** 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-06
Client ID: PB-666-02-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 10:50
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/24/21 11:16
Analyst: AJK
Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00053	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00027	1
Toluene	ND		mg/kg	0.0011	0.00058	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00059	1
o-Xylene	ND		mg/kg	0.0011	0.00031	1
Xylenes, Total	ND		mg/kg	0.0011	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	118		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126144

Project Number: 200.00135.005 **Report Date:** 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-07
Client ID: PB-666-01-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 11:10
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/23/21 16:45
Analyst: JC
Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00047	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00095	0.00024	1
Toluene	ND		mg/kg	0.00095	0.00051	1
1,2-Dibromoethane	ND		mg/kg	0.00047	0.00028	1
Ethylbenzene	ND		mg/kg	0.00095	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00053	1
o-Xylene	ND		mg/kg	0.00095	0.00028	1
Xylenes, Total	ND		mg/kg	0.00095	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00095	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	116		70-130
Dibromofluoromethane	93		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126144

Project Number: 200.00135.005 **Report Date:** 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-08
Client ID: PB-663-11-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 11:50
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/23/21 17:11
Analyst: JC
Percent Solids: 72%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0025	0.00025	1
Benzene	0.00063		mg/kg	0.00063	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00032	1
Toluene	0.0062		mg/kg	0.0013	0.00069	1
1,2-Dibromoethane	ND		mg/kg	0.00063	0.00037	1
Ethylbenzene	0.0033		mg/kg	0.0013	0.00018	1
p/m-Xylene	0.019		mg/kg	0.0025	0.00071	1
o-Xylene	0.012		mg/kg	0.0013	0.00037	1
Xylenes, Total	0.031		mg/kg	0.0013	0.00037	1
Isopropylbenzene	0.0011	J	mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	0.011		mg/kg	0.0025	0.00024	1
1,2,4-Trimethylbenzene	0.035		mg/kg	0.0025	0.00042	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	120		70-130
Dibromofluoromethane	84		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126144

Project Number: 200.00135.005 **Report Date:** 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-09
Client ID: PB-666-03-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 12:05
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/23/21 17:36
Analyst: JC
Percent Solids: 53%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0036	0.00036	1
Benzene	ND		mg/kg	0.00090	0.00030	1
1,2-Dichloroethane	ND		mg/kg	0.0018	0.00046	1
Toluene	ND		mg/kg	0.0018	0.00098	1
1,2-Dibromoethane	ND		mg/kg	0.00090	0.00053	1
Ethylbenzene	ND		mg/kg	0.0018	0.00025	1
p/m-Xylene	ND		mg/kg	0.0036	0.0010	1
o-Xylene	ND		mg/kg	0.0018	0.00052	1
Xylenes, Total	ND		mg/kg	0.0018	0.00052	1
Isopropylbenzene	ND		mg/kg	0.0018	0.00020	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0036	0.00035	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0036	0.00060	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	119		70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126144

Project Number: 200.00135.005 **Report Date:** 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-10
Client ID: PB-666-15-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 12:15
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/23/21 18:01
Analyst: JC
Percent Solids: 78%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00096	0.00025	1
Toluene	ND		mg/kg	0.00096	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00096	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00096	0.00028	1
Xylenes, Total	ND		mg/kg	0.00096	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00096	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	119		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126144

Project Number: 200.00135.005 **Report Date:** 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-11
Client ID: PB-666-16-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 12:30
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/23/21 18:26
Analyst: JC
Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00056	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00061	1
1,2-Dibromoethane	ND		mg/kg	0.00056	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0022	0.00062	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	118		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126144

Project Number: 200.00135.005 **Report Date:** 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-12
Client ID: PB-666-17-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 12:45
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/23/21 18:51
Analyst: JC
Percent Solids: 68%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0029	0.00029	1
Benzene	ND		mg/kg	0.00073	0.00024	1
1,2-Dichloroethane	ND		mg/kg	0.0014	0.00037	1
Toluene	ND		mg/kg	0.0014	0.00079	1
1,2-Dibromoethane	ND		mg/kg	0.00073	0.00043	1
Ethylbenzene	ND		mg/kg	0.0014	0.00020	1
p/m-Xylene	ND		mg/kg	0.0029	0.00082	1
o-Xylene	ND		mg/kg	0.0014	0.00042	1
Xylenes, Total	ND		mg/kg	0.0014	0.00042	1
Isopropylbenzene	ND		mg/kg	0.0014	0.00016	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0029	0.00028	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0029	0.00049	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	117		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126144

Project Number: 200.00135.005 **Report Date:** 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-13
Client ID: PB-666-18-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 13:20
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/23/21 19:16
Analyst: JC
Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0031	0.00031	1
Benzene	0.00037	J	mg/kg	0.00077	0.00026	1
1,2-Dichloroethane	ND		mg/kg	0.0015	0.00040	1
Toluene	ND		mg/kg	0.0015	0.00084	1
1,2-Dibromoethane	ND		mg/kg	0.00077	0.00045	1
Ethylbenzene	ND		mg/kg	0.0015	0.00022	1
p/m-Xylene	ND		mg/kg	0.0031	0.00086	1
o-Xylene	ND		mg/kg	0.0015	0.00045	1
Xylenes, Total	ND		mg/kg	0.0015	0.00045	1
Isopropylbenzene	ND		mg/kg	0.0015	0.00017	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0031	0.00030	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0031	0.00052	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	116		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126144

Project Number: 200.00135.005 **Report Date:** 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-14
Client ID: PB-666-19-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 13:35
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/23/21 19:41
Analyst: JC
Percent Solids: 70%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0027	0.00027	1
Benzene	ND		mg/kg	0.00067	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00034	1
Toluene	0.0013		mg/kg	0.0013	0.00072	1
1,2-Dibromoethane	ND		mg/kg	0.00067	0.00039	1
Ethylbenzene	ND		mg/kg	0.0013	0.00019	1
p/m-Xylene	ND		mg/kg	0.0027	0.00075	1
o-Xylene	ND		mg/kg	0.0013	0.00039	1
Xylenes, Total	ND		mg/kg	0.0013	0.00039	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0027	0.00026	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0027	0.00044	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	118		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126144

Project Number: 200.00135.005 **Report Date:** 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-15 D2 Date Collected: 05/18/21 13:50
Client ID: PB-666-20-SS01 Date Received: 05/18/21
Sample Location: PHILADELPHIA, PA Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/24/21 12:07
Analyst: AJK
Percent Solids: 71%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.61	0.061	2.5
Benzene	5.8		mg/kg	0.15	0.050	2.5
1,2-Dichloroethane	ND		mg/kg	0.30	0.078	2.5
Toluene	1100	E	mg/kg	0.30	0.16	2.5
1,2-Dibromoethane	ND		mg/kg	0.15	0.089	2.5
Ethylbenzene	1.9		mg/kg	0.30	0.043	2.5
p/m-Xylene	8.1		mg/kg	0.61	0.17	2.5
o-Xylene	4.2		mg/kg	0.30	0.088	2.5
Xylenes, Total	12.		mg/kg	0.30	0.088	2.5
Isopropylbenzene	0.81		mg/kg	0.30	0.033	2.5
1,3,5-Trimethylbenzene	3.5		mg/kg	0.61	0.058	2.5
1,2,4-Trimethylbenzene	6.6		mg/kg	0.61	0.10	2.5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	112		70-130
4-Bromofluorobenzene	122		70-130
Dibromofluoromethane	90		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126144

Project Number: 200.00135.005 **Report Date:** 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-15 D
Client ID: PB-666-20-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 13:50
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/23/21 22:13
Analyst: JC
Percent Solids: 71%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Toluene	1500		mg/kg	12	6.6	100

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	115		70-130
Dibromofluoromethane	92		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126144

Project Number: 200.00135.005 **Report Date:** 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-16
Client ID: PB-666-21-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 14:00
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/20/21 22:21
Analyst: MV
Percent Solids: 53%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0049	0.00049	1
Benzene	ND		mg/kg	0.0012	0.00040	1
1,2-Dichloroethane	ND		mg/kg	0.0024	0.00063	1
Toluene	ND		mg/kg	0.0024	0.0013	1
1,2-Dibromoethane	ND		mg/kg	0.0012	0.00071	1
Ethylbenzene	ND		mg/kg	0.0024	0.00034	1
p/m-Xylene	ND		mg/kg	0.0049	0.0014	1
o-Xylene	ND		mg/kg	0.0024	0.00071	1
Xylenes, Total	ND		mg/kg	0.0024	0.00071	1
Isopropylbenzene	ND		mg/kg	0.0024	0.00026	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0049	0.00047	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0049	0.00081	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	119		70-130
Toluene-d8	121		70-130
4-Bromofluorobenzene	**159**	Q	70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126144

Project Number: 200.00135.005 **Report Date:** 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-16
Client ID: PB-666-21-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 14:00
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/21/21 23:15
Analyst: NLK
Percent Solids: 53%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.35	0.035	1
Benzene	0.067	J	mg/kg	0.088	0.029	1
1,2-Dichloroethane	ND		mg/kg	0.18	0.045	1
Toluene	0.10	J	mg/kg	0.18	0.096	1
1,2-Dibromoethane	ND		mg/kg	0.088	0.052	1
Ethylbenzene	0.048	J	mg/kg	0.18	0.025	1
p/m-Xylene	0.10	J	mg/kg	0.35	0.098	1
o-Xylene	ND		mg/kg	0.18	0.051	1
Xylenes, Total	0.10	J	mg/kg	0.18	0.051	1
Isopropylbenzene	ND		mg/kg	0.18	0.019	1
1,3,5-Trimethylbenzene	0.044	J	mg/kg	0.35	0.034	1
1,2,4-Trimethylbenzene	0.088	J	mg/kg	0.35	0.059	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	118		70-130
Dibromofluoromethane	91		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126144

Project Number: 200.00135.005 **Report Date:** 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-17
Client ID: PB-666-22-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 14:40
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/24/21 11:41
Analyst: AJK
Percent Solids: 54%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0053	0.00053	1
Benzene	ND		mg/kg	0.0013	0.00044	1
1,2-Dichloroethane	ND		mg/kg	0.0026	0.00068	1
Toluene	ND		mg/kg	0.0026	0.0014	1
1,2-Dibromoethane	ND		mg/kg	0.0013	0.00077	1
Ethylbenzene	0.00056	J	mg/kg	0.0026	0.00037	1
p/m-Xylene	ND		mg/kg	0.0053	0.0015	1
o-Xylene	ND		mg/kg	0.0026	0.00077	1
Xylenes, Total	ND		mg/kg	0.0026	0.00077	1
Isopropylbenzene	0.0039		mg/kg	0.0026	0.00029	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0053	0.00051	1
1,2,4-Trimethylbenzene	0.0014	J	mg/kg	0.0053	0.00088	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	122		70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126144

Project Number: 200.00135.005 **Report Date:** 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-18 Date Collected: 05/18/21 14:05
Client ID: DUP-01 Date Received: 05/18/21
Sample Location: PHILADELPHIA, PA Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/21/21 07:36
Analyst: MKS
Percent Solids: 75%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0026	0.00026	1
Benzene	ND		mg/kg	0.00065	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00033	1
Toluene	0.0030		mg/kg	0.0013	0.00070	1
1,2-Dibromoethane	ND		mg/kg	0.00065	0.00038	1
Ethylbenzene	ND		mg/kg	0.0013	0.00018	1
p/m-Xylene	ND		mg/kg	0.0026	0.00072	1
o-Xylene	ND		mg/kg	0.0013	0.00038	1
Xylenes, Total	ND		mg/kg	0.0013	0.00038	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0026	0.00025	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0026	0.00043	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	125		70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126144
Project Number: 200.00135.005
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-19
Client ID: FB-210518-1
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 14:45
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8011
Analytical Date: 05/21/21 11:44
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 05/21/21 09:36

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	B

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126144

Project Number: 200.00135.005 **Report Date:** 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-19 Date Collected: 05/18/21 14:45
Client ID: FB-210518-1 Date Received: 05/18/21
Sample Location: PHILADELPHIA, PA Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 05/25/21 09:18
Analyst: KTD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	90		70-130
4-Bromofluorobenzene	79		70-130
Dibromofluoromethane	118		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126144
Project Number: 200.00135.005
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-20
Client ID: FB-210518-2
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 14:50
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8011
Analytical Date: 05/21/21 11:50
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 05/21/21 09:36

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	B

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126144
Project Number: 200.00135.005
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-20
Client ID: FB-210518-2
Sample Location: PHILADELPHIA, PA
Date Collected: 05/18/21 14:50
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 05/25/21 09:42
Analyst: KTD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	88		70-130
4-Bromofluorobenzene	80		70-130
Dibromofluoromethane	120		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126144
Project Number: 200.00135.005
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-21
Client ID: TB-210518
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 00:00
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8011
Analytical Date: 05/21/21 11:57
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 05/21/21 09:36

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	B

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126144

Project Number: 200.00135.005 **Report Date:** 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-21
Client ID: TB-210518
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 00:00
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 05/25/21 10:08
Analyst: KTD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	89		70-130
4-Bromofluorobenzene	78		70-130
Dibromofluoromethane	115		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126144
Report Date: 06/02/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8011
Analytical Date: 05/21/21 10:42
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 05/21/21 09:36

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 19-21 Batch: WG1501981-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.005	B

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126144

Project Number: 200.00135.005 **Report Date:** 06/02/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 05/20/21 16:03
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,16 Batch: WG1502132-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	116		70-130
Dibromofluoromethane	92		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126144

Project Number: 200.00135.005 **Report Date:** 06/02/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 05/20/21 16:03
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 02-03,05 Batch: WG1502133-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	116		70-130
Dibromofluoromethane	92		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126144

Project Number: 200.00135.005 **Report Date:** 06/02/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 05/21/21 07:11
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 18 Batch: WG1502164-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	114		70-130
Dibromofluoromethane	90		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126144

Project Number: 200.00135.005 **Report Date:** 06/02/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 05/21/21 16:08
Analyst: KTD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 16 Batch: WG1502604-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	116		70-130
Dibromofluoromethane	92		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126144

Project Number: 200.00135.005 **Report Date:** 06/02/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 05/21/21 16:08
Analyst: KTD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 05 Batch: WG1502605-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	116		70-130
Dibromofluoromethane	92		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126144

Project Number: 200.00135.005 **Report Date:** 06/02/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 05/23/21 15:55
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 07-14 Batch: WG1502761-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	115		70-130
Dibromofluoromethane	93		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126144

Project Number: 200.00135.005 **Report Date:** 06/02/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 05/24/21 10:51
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 15 Batch: WG1502764-10					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	115		70-130
Dibromofluoromethane	93		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126144

Project Number: 200.00135.005 **Report Date:** 06/02/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 05/23/21 15:55
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 04,15 Batch: WG1502764-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	115		70-130
Dibromofluoromethane	93		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126144

Project Number: 200.00135.005 **Report Date:** 06/02/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 05/24/21 10:51
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 06,17 Batch: WG1503461-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	115		70-130
Dibromofluoromethane	93		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126144

Project Number: 200.00135.005 **Report Date:** 06/02/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 05/25/21 08:53
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 19-21 Batch: WG1503616-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	89		70-130
4-Bromofluorobenzene	78		70-130
Dibromofluoromethane	121		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126144

Report Date: 06/02/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab	Associated sample(s): 19-21 Batch: WG1501981-2								
1,2-Dibromoethane	93		-		80-120	-		20	B

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126144

Report Date: 06/02/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,16 Batch: WG1502132-3 WG1502132-4								
Methyl tert butyl ether	112		114		66-130	2		30
Benzene	114		112		70-130	2		30
1,2-Dichloroethane	114		114		70-130	0		30
Toluene	114		111		70-130	3		30
1,2-Dibromoethane	105		106		70-130	1		30
Ethylbenzene	114		111		70-130	3		30
p/m-Xylene	104		102		70-130	2		30
o-Xylene	104		101		70-130	3		30
Isopropylbenzene	118		113		70-130	4		30
1,3,5-Trimethylbenzene	113		110		70-130	3		30
1,2,4-Trimethylbenzene	111		108		70-130	3		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	105		108		70-130
Toluene-d8	106		106		70-130
4-Bromofluorobenzene	115		114		70-130
Dibromofluoromethane	92		93		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126144

Report Date: 06/02/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 02-03,05 Batch: WG1502133-3 WG1502133-4								
Methyl tert butyl ether	112		114		66-130	2		30
Benzene	114		112		70-130	2		30
1,2-Dichloroethane	114		114		70-130	0		30
Toluene	114		111		70-130	3		30
1,2-Dibromoethane	105		106		70-130	1		30
Ethylbenzene	114		111		70-130	3		30
p/m-Xylene	104		102		70-130	2		30
o-Xylene	104		101		70-130	3		30
Isopropylbenzene	118		113		70-130	4		30
1,3,5-Trimethylbenzene	113		110		70-130	3		30
1,2,4-Trimethylbenzene	111		108		70-130	3		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	105		108		70-130
Toluene-d8	106		106		70-130
4-Bromofluorobenzene	115		114		70-130
Dibromofluoromethane	92		93		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126144

Report Date: 06/02/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 18 Batch: WG1502164-3 WG1502164-4								
Methyl tert butyl ether	110		109		66-130	1		30
Benzene	105		106		70-130	1		30
1,2-Dichloroethane	107		106		70-130	1		30
Toluene	105		106		70-130	1		30
1,2-Dibromoethane	102		102		70-130	0		30
Ethylbenzene	104		105		70-130	1		30
p/m-Xylene	96		97		70-130	1		30
o-Xylene	96		96		70-130	0		30
Isopropylbenzene	106		108		70-130	2		30
1,3,5-Trimethylbenzene	103		105		70-130	2		30
1,2,4-Trimethylbenzene	102		104		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	105		104		70-130
Toluene-d8	105		106		70-130
4-Bromofluorobenzene	115		115		70-130
Dibromofluoromethane	92		92		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126144

Report Date: 06/02/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 16 Batch: WG1502604-3 WG1502604-4								
Methyl tert butyl ether	111		111		66-130	0		30
Benzene	108		107		70-130	1		30
1,2-Dichloroethane	109		109		70-130	0		30
Toluene	110		107		70-130	3		30
1,2-Dibromoethane	105		103		70-130	2		30
Ethylbenzene	107		104		70-130	3		30
p/m-Xylene	99		96		70-130	3		30
o-Xylene	99		97		70-130	2		30
Isopropylbenzene	109		106		70-130	3		30
1,3,5-Trimethylbenzene	107		105		70-130	2		30
1,2,4-Trimethylbenzene	106		103		70-130	3		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	104		105		70-130
Toluene-d8	106		106		70-130
4-Bromofluorobenzene	115		115		70-130
Dibromofluoromethane	92		92		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126144

Report Date: 06/02/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 05 Batch: WG1502605-3 WG1502605-4								
Methyl tert butyl ether	111		111		66-130	0		30
Benzene	108		107		70-130	1		30
1,2-Dichloroethane	109		109		70-130	0		30
Toluene	110		107		70-130	3		30
1,2-Dibromoethane	105		103		70-130	2		30
Ethylbenzene	107		104		70-130	3		30
p/m-Xylene	99		96		70-130	3		30
o-Xylene	99		97		70-130	2		30
Isopropylbenzene	109		106		70-130	3		30
1,3,5-Trimethylbenzene	107		105		70-130	2		30
1,2,4-Trimethylbenzene	106		103		70-130	3		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	105		105		70-130
Toluene-d8	106		106		70-130
4-Bromofluorobenzene	115		115		70-130
Dibromofluoromethane	92		92		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126144

Report Date: 06/02/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 07-14 Batch: WG1502761-3 WG1502761-4								
Methyl tert butyl ether	117		115		66-130	2		30
Benzene	112		111		70-130	1		30
1,2-Dichloroethane	113		110		70-130	3		30
Toluene	112		111		70-130	1		30
1,2-Dibromoethane	108		106		70-130	2		30
Ethylbenzene	110		109		70-130	1		30
p/m-Xylene	102		101		70-130	1		30
o-Xylene	102		100		70-130	2		30
Isopropylbenzene	112		112		70-130	0		30
1,3,5-Trimethylbenzene	109		110		70-130	1		30
1,2,4-Trimethylbenzene	108		107		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	105		104		70-130
Toluene-d8	106		105		70-130
4-Bromofluorobenzene	115		115		70-130
Dibromofluoromethane	93		94		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126144

Report Date: 06/02/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 04,15 Batch: WG1502764-3 WG1502764-4								
Methyl tert butyl ether	117		115		66-130	2		30
Benzene	112		111		70-130	1		30
1,2-Dichloroethane	113		110		70-130	3		30
Toluene	112		111		70-130	1		30
1,2-Dibromoethane	108		106		70-130	2		30
Ethylbenzene	110		109		70-130	1		30
p/m-Xylene	102		101		70-130	1		30
o-Xylene	102		100		70-130	2		30
Isopropylbenzene	112		112		70-130	0		30
1,3,5-Trimethylbenzene	109		110		70-130	1		30
1,2,4-Trimethylbenzene	108		107		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	105		104		70-130
Toluene-d8	106		105		70-130
4-Bromofluorobenzene	114		115		70-130
Dibromofluoromethane	93		94		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126144

Report Date: 06/02/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 15 Batch: WG1502764-8 WG1502764-9								
Methyl tert butyl ether	121		116		66-130	4		30
Benzene	108		113		70-130	5		30
1,2-Dichloroethane	113		111		70-130	2		30
Toluene	106		112		70-130	6		30
1,2-Dibromoethane	112		108		70-130	4		30
Ethylbenzene	104		110		70-130	6		30
p/m-Xylene	96		101		70-130	5		30
o-Xylene	97		102		70-130	5		30
Isopropylbenzene	104		112		70-130	7		30
1,3,5-Trimethylbenzene	103		110		70-130	7		30
1,2,4-Trimethylbenzene	102		107		70-130	5		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	104		100		70-130
Toluene-d8	105		105		70-130
4-Bromofluorobenzene	113		114		70-130
Dibromofluoromethane	93		92		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126144

Report Date: 06/02/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 06,17 Batch: WG1503461-3 WG1503461-4								
Methyl tert butyl ether	121		116		66-130	4		30
Benzene	108		113		70-130	5		30
1,2-Dichloroethane	113		111		70-130	2		30
Toluene	106		112		70-130	6		30
1,2-Dibromoethane	112		108		70-130	4		30
Ethylbenzene	104		110		70-130	6		30
p/m-Xylene	96		101		70-130	5		30
o-Xylene	97		102		70-130	5		30
Isopropylbenzene	104		112		70-130	7		30
1,3,5-Trimethylbenzene	103		110		70-130	7		30
1,2,4-Trimethylbenzene	102		107		70-130	5		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	105		100		70-130
Toluene-d8	105		105		70-130
4-Bromofluorobenzene	113		114		70-130
Dibromofluoromethane	93		92		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126144

Report Date: 06/02/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 19-21 Batch: WG1503616-3 WG1503616-4								
Methyl tert butyl ether	89		89		63-130	0		20
Benzene	96		90		70-130	6		20
1,2-Dichloroethane	100		100		70-130	0		20
Toluene	91		86		70-130	6		20
Ethylbenzene	93		91		70-130	2		20
p/m-Xylene	100		95		70-130	5		20
o-Xylene	95		95		70-130	0		20
Isopropylbenzene	88		86		70-130	2		20
1,3,5-Trimethylbenzene	88		84		64-130	5		20
1,2,4-Trimethylbenzene	88		85		70-130	3		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	96		100		70-130
Toluene-d8	89		90		70-130
4-Bromofluorobenzene	76		79		70-130
Dibromofluoromethane	110		112		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126144

Project Number: 200.00135.005 **Report Date:** 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-01 D
Client ID: PB-666-14-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 09:05
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/01/21 17:58
Analyst: DV
Percent Solids: 79%

Extraction Method: EPA 3546
Extraction Date: 05/30/21 09:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	1.4		mg/kg	0.42	0.075	50
Fluorene	3.1		mg/kg	0.42	0.050	50
Phenanthrene	30.		mg/kg	0.42	0.036	50
Anthracene	7.9		mg/kg	0.42	0.033	50
Pyrene	28.		mg/kg	0.42	0.029	50
Benzo(a)anthracene	19.		mg/kg	0.42	0.040	50
Chrysene	15.		mg/kg	0.42	0.031	50
Benzo(b)fluoranthene	20.		mg/kg	0.42	0.040	50
Benzo(a)pyrene	16.		mg/kg	0.42	0.050	50
Benzo(ghi)perylene	8.1		mg/kg	0.42	0.036	50

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	**0**	Q	23-120
2-Fluorobiphenyl	**0**	Q	30-120
4-Terphenyl-d14	**0**	Q	18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126144

Project Number: 200.00135.005 **Report Date:** 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-02 D
Client ID: PB-666-12-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 09:55
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/01/21 18:14
Analyst: DV
Percent Solids: 69%

Extraction Method: EPA 3546
Extraction Date: 05/30/21 09:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	160		mg/kg	4.8	0.87	500
Fluorene	53.		mg/kg	4.8	0.58	500
Phenanthrene	270		mg/kg	4.8	0.41	500
Anthracene	74.		mg/kg	4.8	0.39	500
Pyrene	190		mg/kg	4.8	0.34	500
Benzo(a)anthracene	110		mg/kg	4.8	0.46	500
Chrysene	86.		mg/kg	4.8	0.36	500
Benzo(b)fluoranthene	120		mg/kg	4.8	0.46	500
Benzo(a)pyrene	90.		mg/kg	4.8	0.58	500
Benzo(ghi)perylene	50.		mg/kg	4.8	0.41	500

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	**0**	Q	23-120
2-Fluorobiphenyl	**0**	Q	30-120
4-Terphenyl-d14	**0**	Q	18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126144
Project Number: 200.00135.005
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-03 D
Client ID: PB-666-11-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 10:05
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/01/21 18:31
Analyst: DV
Percent Solids: 78%

Extraction Method: EPA 3546
Extraction Date: 05/30/21 09:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	1.4	J	mg/kg	4.2	0.76	500
Fluorene	18.		mg/kg	4.2	0.50	500
Phenanthrene	72.		mg/kg	4.2	0.36	500
Anthracene	41.		mg/kg	4.2	0.34	500
Pyrene	180		mg/kg	4.2	0.29	500
Benzo(a)anthracene	130		mg/kg	4.2	0.40	500
Chrysene	110		mg/kg	4.2	0.32	500
Benzo(b)fluoranthene	170		mg/kg	4.2	0.40	500
Benzo(a)pyrene	140		mg/kg	4.2	0.50	500
Benzo(ghi)perylene	84.		mg/kg	4.2	0.36	500

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	**0**	Q	23-120
2-Fluorobiphenyl	**0**	Q	30-120
4-Terphenyl-d14	**0**	Q	18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126144
Project Number: 200.00135.005
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-04 D
Client ID: PB-666-07-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 10:19
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 05/31/21 15:42
Analyst: JJW
Percent Solids: 68%

Extraction Method: EPA 3546
Extraction Date: 05/30/21 09:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.40		mg/kg	0.048	0.0086	5
Fluorene	ND		mg/kg	0.048	0.0058	5
Phenanthrene	0.54		mg/kg	0.048	0.0041	5
Anthracene	ND		mg/kg	0.048	0.0038	5
Pyrene	0.066		mg/kg	0.048	0.0034	5
Benzo(a)anthracene	0.0098	J	mg/kg	0.048	0.0046	5
Chrysene	0.018	J	mg/kg	0.048	0.0036	5
Benzo(b)fluoranthene	0.0091	J	mg/kg	0.048	0.0046	5
Benzo(a)pyrene	0.0060	J	mg/kg	0.048	0.0058	5
Benzo(ghi)perylene	0.12		mg/kg	0.048	0.0041	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	**143**	Q	23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	65		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126144
Project Number: 200.00135.005
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-05 D
Client ID: PB-666-04-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 10:35
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 05/31/21 17:04
Analyst: JJW
Percent Solids: 91%

Extraction Method: EPA 3546
Extraction Date: 05/30/21 09:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.12		mg/kg	0.073	0.013	10
Fluorene	0.020	J	mg/kg	0.073	0.0088	10
Phenanthrene	0.19		mg/kg	0.073	0.0062	10
Anthracene	ND		mg/kg	0.073	0.0058	10
Pyrene	0.17		mg/kg	0.073	0.0051	10
Benzo(a)anthracene	0.17		mg/kg	0.073	0.0069	10
Chrysene	0.12		mg/kg	0.073	0.0055	10
Benzo(b)fluoranthene	0.23		mg/kg	0.073	0.0069	10
Benzo(a)pyrene	0.33		mg/kg	0.073	0.0088	10
Benzo(ghi)perylene	7.2		mg/kg	0.073	0.0062	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	84		23-120
2-Fluorobiphenyl	31		30-120
4-Terphenyl-d14	30		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126144
Project Number: 200.00135.005
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-06 D
Client ID: PB-666-02-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 10:50
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 05/31/21 17:20
Analyst: JJW
Percent Solids: 87%

Extraction Method: EPA 3546
Extraction Date: 05/30/21 09:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		mg/kg	0.30	0.055	20
Fluorene	0.050	J	mg/kg	0.30	0.037	20
Phenanthrene	0.60		mg/kg	0.30	0.026	20
Anthracene	ND		mg/kg	0.30	0.024	20
Pyrene	0.95		mg/kg	0.30	0.021	20
Benzo(a)anthracene	1.0		mg/kg	0.30	0.029	20
Chrysene	0.74		mg/kg	0.30	0.023	20
Benzo(b)fluoranthene	1.4		mg/kg	0.30	0.029	20
Benzo(a)pyrene	1.0		mg/kg	0.30	0.037	20
Benzo(ghi)perylene	2.8		mg/kg	0.30	0.026	20

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	**0**	Q	23-120
2-Fluorobiphenyl	**0**	Q	30-120
4-Terphenyl-d14	**0**	Q	18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126144
Project Number: 200.00135.005
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-07 D
Client ID: PB-666-01-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 11:10
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 05/31/21 15:58
Analyst: JJW
Percent Solids: 87%

Extraction Method: EPA 3546
Extraction Date: 05/30/21 09:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.025	J	mg/kg	0.038	0.0068	5
Fluorene	0.025	J	mg/kg	0.038	0.0045	5
Phenanthrene	0.29		mg/kg	0.038	0.0032	5
Anthracene	0.086		mg/kg	0.038	0.0030	5
Pyrene	0.48		mg/kg	0.038	0.0026	5
Benzo(a)anthracene	0.36		mg/kg	0.038	0.0036	5
Chrysene	0.25		mg/kg	0.038	0.0028	5
Benzo(b)fluoranthene	0.40		mg/kg	0.038	0.0036	5
Benzo(a)pyrene	0.30		mg/kg	0.038	0.0045	5
Benzo(ghi)perylene	0.13		mg/kg	0.038	0.0032	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	**146**	Q	23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	62		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126144

Project Number: 200.00135.005 **Report Date:** 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-08 D
Client ID: PB-663-11-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 11:50
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/01/21 18:47
Analyst: DV
Percent Solids: 72%

Extraction Method: EPA 3546
Extraction Date: 05/30/21 09:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	6.1		mg/kg	1.8	0.32	200
Fluorene	11.		mg/kg	1.8	0.22	200
Phenanthrene	100		mg/kg	1.8	0.15	200
Anthracene	28.		mg/kg	1.8	0.14	200
Pyrene	87.		mg/kg	1.8	0.13	200
Benzo(a)anthracene	57.		mg/kg	1.8	0.17	200
Chrysene	46.		mg/kg	1.8	0.14	200
Benzo(b)fluoranthene	55.		mg/kg	1.8	0.17	200
Benzo(a)pyrene	46.		mg/kg	1.8	0.22	200
Benzo(ghi)perylene	25.		mg/kg	1.8	0.15	200

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	**0**	Q	23-120
2-Fluorobiphenyl	**0**	Q	30-120
4-Terphenyl-d14	**0**	Q	18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126144
Project Number: 200.00135.005
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-09 D
Client ID: PB-666-03-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 12:05
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 05/31/21 14:36
Analyst: JJW
Percent Solids: 53%

Extraction Method: EPA 3546
Extraction Date: 05/30/21 09:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.26		mg/kg	0.025	0.0045	2
Fluorene	0.048		mg/kg	0.025	0.0030	2
Phenanthrene	1.0		mg/kg	0.025	0.0021	2
Anthracene	0.23		mg/kg	0.025	0.0020	2
Pyrene	1.9		mg/kg	0.025	0.0018	2
Benzo(a)anthracene	1.5		mg/kg	0.025	0.0024	2
Chrysene	1.2		mg/kg	0.025	0.0019	2
Benzo(b)fluoranthene	1.8		mg/kg	0.025	0.0024	2
Benzo(a)pyrene	1.4		mg/kg	0.025	0.0030	2
Benzo(ghi)perylene	0.72		mg/kg	0.025	0.0021	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	**130**	Q	23-120
2-Fluorobiphenyl	65		30-120
4-Terphenyl-d14	60		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126144

Project Number: 200.00135.005 **Report Date:** 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-10 D
Client ID: PB-666-15-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 12:15
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/01/21 19:03
Analyst: DV
Percent Solids: 78%

Extraction Method: EPA 3546
Extraction Date: 05/30/21 09:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	1.8	J	mg/kg	5.0	0.91	600
Fluorene	ND		mg/kg	5.0	0.61	600
Phenanthrene	1.2	J	mg/kg	5.0	0.43	600
Anthracene	0.81	J	mg/kg	5.0	0.40	600
Pyrene	47.		mg/kg	5.0	0.35	600
Benzo(a)anthracene	15.		mg/kg	5.0	0.48	600
Chrysene	53.		mg/kg	5.0	0.38	600
Benzo(b)fluoranthene	18.		mg/kg	5.0	0.48	600
Benzo(a)pyrene	38.		mg/kg	5.0	0.61	600
Benzo(ghi)perylene	19.		mg/kg	5.0	0.43	600

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	**0**	Q	23-120
2-Fluorobiphenyl	**0**	Q	30-120
4-Terphenyl-d14	**0**	Q	18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126144

Project Number: 200.00135.005 **Report Date:** 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-11 D
Client ID: PB-666-16-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 12:30
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/01/21 19:20
Analyst: DV
Percent Solids: 81%

Extraction Method: EPA 3546
Extraction Date: 05/30/21 09:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	1.8		mg/kg	0.40	0.072	50
Fluorene	1.3		mg/kg	0.40	0.048	50
Phenanthrene	17.		mg/kg	0.40	0.034	50
Anthracene	4.6		mg/kg	0.40	0.032	50
Pyrene	25.		mg/kg	0.40	0.028	50
Benzo(a)anthracene	18.		mg/kg	0.40	0.038	50
Chrysene	14.		mg/kg	0.40	0.030	50
Benzo(b)fluoranthene	20.		mg/kg	0.40	0.038	50
Benzo(a)pyrene	15.		mg/kg	0.40	0.048	50
Benzo(ghi)perylene	8.6		mg/kg	0.40	0.034	50

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	**0**	Q	23-120
2-Fluorobiphenyl	**0**	Q	30-120
4-Terphenyl-d14	**0**	Q	18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126144

Project Number: 200.00135.005 **Report Date:** 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-12 D
Client ID: PB-666-17-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 12:45
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 05/31/21 14:53
Analyst: JJW
Percent Solids: 68%

Extraction Method: EPA 3546
Extraction Date: 05/30/21 09:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.021		mg/kg	0.019	0.0035	2
Fluorene	0.022		mg/kg	0.019	0.0023	2
Phenanthrene	0.30		mg/kg	0.019	0.0016	2
Anthracene	0.089		mg/kg	0.019	0.0015	2
Pyrene	0.40		mg/kg	0.019	0.0013	2
Benzo(a)anthracene	0.28		mg/kg	0.019	0.0018	2
Chrysene	0.21		mg/kg	0.019	0.0014	2
Benzo(b)fluoranthene	0.32		mg/kg	0.019	0.0018	2
Benzo(a)pyrene	0.24		mg/kg	0.019	0.0023	2
Benzo(ghi)perylene	0.12		mg/kg	0.019	0.0016	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	110		23-120
2-Fluorobiphenyl	52		30-120
4-Terphenyl-d14	49		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126144
Project Number: 200.00135.005
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-13
Client ID: PB-666-18-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 13:20
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 05/31/21 13:14
Analyst: JJW
Percent Solids: 80%

Extraction Method: EPA 3546
Extraction Date: 05/31/21 01:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.0022	J	mg/kg	0.0083	0.0015	1
Fluorene	0.0032	J	mg/kg	0.0083	0.0010	1
Phenanthrene	0.031		mg/kg	0.0083	0.00071	1
Anthracene	0.0085		mg/kg	0.0083	0.00067	1
Pyrene	0.046		mg/kg	0.0083	0.00058	1
Benzo(a)anthracene	0.035		mg/kg	0.0083	0.00079	1
Chrysene	0.045		mg/kg	0.0083	0.00062	1
Benzo(b)fluoranthene	0.031		mg/kg	0.0083	0.00079	1
Benzo(a)pyrene	0.029		mg/kg	0.0083	0.0010	1
Benzo(ghi)perylene	0.016		mg/kg	0.0083	0.00071	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	**130**	Q	23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	68		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126144

Project Number: 200.00135.005 **Report Date:** 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-14
Client ID: PB-666-19-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 13:35
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 05/31/21 13:31
Analyst: JJW
Percent Solids: 70%

Extraction Method: EPA 3546
Extraction Date: 05/31/21 01:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.0098		mg/kg	0.0093	0.0017	1
Fluorene	0.0020	J	mg/kg	0.0093	0.0011	1
Phenanthrene	0.026		mg/kg	0.0093	0.00079	1
Anthracene	0.0095		mg/kg	0.0093	0.00074	1
Pyrene	0.040		mg/kg	0.0093	0.00065	1
Benzo(a)anthracene	0.036		mg/kg	0.0093	0.00088	1
Chrysene	0.036		mg/kg	0.0093	0.00070	1
Benzo(b)fluoranthene	0.068		mg/kg	0.0093	0.00088	1
Benzo(a)pyrene	0.043		mg/kg	0.0093	0.0011	1
Benzo(ghi)perylene	0.047		mg/kg	0.0093	0.00079	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	**140**	Q	23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	56		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126144
Project Number: 200.00135.005
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-15
Client ID: PB-666-20-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 13:50
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 05/31/21 13:47
Analyst: JJW
Percent Solids: 71%

Extraction Method: EPA 3546
Extraction Date: 05/31/21 01:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.034		mg/kg	0.0093	0.0017	1
Fluorene	ND		mg/kg	0.0093	0.0011	1
Phenanthrene	0.051		mg/kg	0.0093	0.00079	1
Anthracene	0.015		mg/kg	0.0093	0.00074	1
Pyrene	0.027		mg/kg	0.0093	0.00065	1
Benzo(a)anthracene	0.018		mg/kg	0.0093	0.00088	1
Chrysene	0.012		mg/kg	0.0093	0.00070	1
Benzo(b)fluoranthene	0.017		mg/kg	0.0093	0.00088	1
Benzo(a)pyrene	0.013		mg/kg	0.0093	0.0011	1
Benzo(ghi)perylene	ND		mg/kg	0.0093	0.00079	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	**123**	Q	23-120
2-Fluorobiphenyl	55		30-120
4-Terphenyl-d14	36		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126144
Project Number: 200.00135.005
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-16
Client ID: PB-666-21-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 14:00
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 05/31/21 14:04
Analyst: JJW
Percent Solids: 53%

Extraction Method: EPA 3546
Extraction Date: 05/31/21 01:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.0034	J	mg/kg	0.012	0.0022	1
Fluorene	ND		mg/kg	0.012	0.0015	1
Phenanthrene	0.0063	J	mg/kg	0.012	0.0010	1
Anthracene	0.0034	J	mg/kg	0.012	0.00098	1
Pyrene	0.023		mg/kg	0.012	0.00086	1
Benzo(a)anthracene	0.031		mg/kg	0.012	0.0012	1
Chrysene	0.029		mg/kg	0.012	0.00092	1
Benzo(b)fluoranthene	0.061		mg/kg	0.012	0.0012	1
Benzo(a)pyrene	0.037		mg/kg	0.012	0.0015	1
Benzo(ghi)perylene	0.032		mg/kg	0.012	0.0010	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	114		23-120
2-Fluorobiphenyl	51		30-120
4-Terphenyl-d14	49		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126144

Project Number: 200.00135.005 **Report Date:** 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-17 D
Client ID: PB-666-22-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 14:40
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 05/31/21 15:09
Analyst: JJW
Percent Solids: 54%

Extraction Method: EPA 3546
Extraction Date: 05/31/21 01:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		mg/kg	0.060	0.011	5
Fluorene	2.5		mg/kg	0.060	0.0072	5
Phenanthrene	1.6		mg/kg	0.060	0.0051	5
Anthracene	ND		mg/kg	0.060	0.0048	5
Pyrene	1.8		mg/kg	0.060	0.0042	5
Benzo(a)anthracene	0.59		mg/kg	0.060	0.0057	5
Chrysene	0.99		mg/kg	0.060	0.0045	5
Benzo(b)fluoranthene	0.17		mg/kg	0.060	0.0057	5
Benzo(a)pyrene	0.31		mg/kg	0.060	0.0072	5
Benzo(ghi)perylene	0.11		mg/kg	0.060	0.0051	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	**121**	Q	23-120
2-Fluorobiphenyl	59		30-120
4-Terphenyl-d14	53		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126144
Project Number: 200.00135.005
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-18
Client ID: DUP-01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 14:05
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 05/31/21 14:20
Analyst: JJW
Percent Solids: 75%

Extraction Method: EPA 3546
Extraction Date: 05/31/21 01:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.039		mg/kg	0.0086	0.0016	1
Fluorene	0.037		mg/kg	0.0086	0.0010	1
Phenanthrene	0.13		mg/kg	0.0086	0.00073	1
Anthracene	0.057		mg/kg	0.0086	0.00069	1
Pyrene	0.15		mg/kg	0.0086	0.00060	1
Benzo(a)anthracene	0.13		mg/kg	0.0086	0.00082	1
Chrysene	0.089		mg/kg	0.0086	0.00065	1
Benzo(b)fluoranthene	0.15		mg/kg	0.0086	0.00082	1
Benzo(a)pyrene	0.11		mg/kg	0.0086	0.0010	1
Benzo(ghi)perylene	0.054		mg/kg	0.0086	0.00073	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	91		23-120
2-Fluorobiphenyl	42		30-120
4-Terphenyl-d14	42		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126144
Project Number: 200.00135.005
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-19
Client ID: FB-210518-1
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 14:45
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 05/26/21 13:27
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 05/24/21 15:59

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.09	J	ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	72		23-120
2-Fluorobiphenyl	73		15-120
4-Terphenyl-d14	81		41-149

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126144
Project Number: 200.00135.005
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-20
Client ID: FB-210518-2
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 14:50
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 05/26/21 14:06
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 05/24/21 15:59

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	66		23-120
2-Fluorobiphenyl	66		15-120
4-Terphenyl-d14	70		41-149

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126144
Report Date: 06/02/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 05/26/21 11:50
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 05/24/21 15:59

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 19-20 Batch: WG1502995-1					
Naphthalene	ND		ug/l	0.10	0.05
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	ND		ug/l	0.05	0.02
Anthracene	ND		ug/l	0.10	0.01
Pyrene	ND		ug/l	0.10	0.02
Benzo(a)anthracene	ND		ug/l	0.05	0.02
Chrysene	ND		ug/l	0.10	0.01
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Benzo(ghi)perylene	ND		ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	54		21-120
Phenol-d6	52		10-120
Nitrobenzene-d5	88		23-120
2-Fluorobiphenyl	91		15-120
2,4,6-Tribromophenol	60		10-120
4-Terphenyl-d14	106		41-149

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126144
Report Date: 06/02/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 05/30/21 17:50
Analyst: RP

Extraction Method: EPA 3546
Extraction Date: 05/29/21 11:55

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01-12 Batch: WG1505342-1					
Naphthalene	ND		mg/kg	0.0066	0.0012
Fluorene	ND		mg/kg	0.0066	0.00079
Phenanthrene	ND		mg/kg	0.0066	0.00056
Anthracene	ND		mg/kg	0.0066	0.00053
Pyrene	ND		mg/kg	0.0066	0.00046
Benzo(a)anthracene	0.00063	J	mg/kg	0.0066	0.00063
Chrysene	ND		mg/kg	0.0066	0.00050
Benzo(b)fluoranthene	ND		mg/kg	0.0066	0.00063
Benzo(a)pyrene	ND		mg/kg	0.0066	0.00079
Benzo(ghi)perylene	ND		mg/kg	0.0066	0.00056

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	101		25-120
Phenol-d6	110		10-120
Nitrobenzene-d5	**127**	Q	23-120
2-Fluorobiphenyl	75		30-120
2,4,6-Tribromophenol	94		10-136
4-Terphenyl-d14	85		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126144
Report Date: 06/02/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 05/31/21 12:25
Analyst: JJW

Extraction Method: EPA 3546
Extraction Date: 05/30/21 10:42

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 13-18 Batch: WG1505502-1					
Naphthalene	ND		mg/kg	0.0065	0.0012
Fluorene	ND		mg/kg	0.0065	0.00078
Phenanthrene	0.0044	J	mg/kg	0.0065	0.00055
Anthracene	0.0012	J	mg/kg	0.0065	0.00052
Pyrene	0.0031	J	mg/kg	0.0065	0.00045
Benzo(a)anthracene	0.0012	J	mg/kg	0.0065	0.00061
Chrysene	0.00068	J	mg/kg	0.0065	0.00048
Benzo(b)fluoranthene	0.00071	J	mg/kg	0.0065	0.00061
Benzo(a)pyrene	ND		mg/kg	0.0065	0.00078
Benzo(ghi)perylene	ND		mg/kg	0.0065	0.00055

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	90		25-120
Phenol-d6	96		10-120
Nitrobenzene-d5	111		23-120
2-Fluorobiphenyl	65		30-120
2,4,6-Tribromophenol	85		10-136
4-Terphenyl-d14	78		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126144

Report Date: 06/02/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 19-20 Batch: WG1502995-2 WG1502995-3								
Naphthalene	78		62		40-140	23		40
Fluorene	90		79		40-140	13		40
Phenanthrene	93		86		40-140	8		40
Anthracene	95		88		40-140	8		40
Pyrene	97		95		26-127	2		40
Benzo(a)anthracene	95		94		40-140	1		40
Chrysene	95		94		40-140	1		40
Benzo(b)fluoranthene	102		100		40-140	2		40
Benzo(a)pyrene	100		99		40-140	1		40
Benzo(ghi)perylene	95		92		40-140	3		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	62		44		21-120
Phenol-d6	54		40		10-120
Nitrobenzene-d5	81		62		23-120
2-Fluorobiphenyl	77		64		15-120
2,4,6-Tribromophenol	74		67		10-120
4-Terphenyl-d14	96		93		41-149

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126144

Report Date: 06/02/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01-12 Batch: WG1505342-2 WG1505342-3								
Naphthalene	62		81		40-140	27		50
Fluorene	68		86		40-140	23		50
Phenanthrene	67		87		40-140	26		50
Anthracene	73		95		40-140	26		50
Pyrene	67		87		35-142	26		50
Benzo(a)anthracene	69		89		40-140	25		50
Chrysene	60		78		40-140	26		50
Benzo(b)fluoranthene	74		93		40-140	23		50
Benzo(a)pyrene	71		92		40-140	26		50
Benzo(ghi)perylene	68		87		40-140	25		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	75		97		25-120
Phenol-d6	80		105		10-120
Nitrobenzene-d5	94		**123**	Q	23-120
2-Fluorobiphenyl	53		69		30-120
2,4,6-Tribromophenol	68		87		10-136
4-Terphenyl-d14	60		78		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126144

Report Date: 06/02/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 13-18 Batch: WG1505502-2 WG1505502-3								
Naphthalene	86		82		40-140	5		50
Fluorene	98		89		40-140	10		50
Phenanthrene	95		87		40-140	9		50
Anthracene	105		95		40-140	10		50
Pyrene	97		88		35-142	10		50
Benzo(a)anthracene	103		90		40-140	13		50
Chrysene	81		74		40-140	9		50
Benzo(b)fluoranthene	103		99		40-140	4		50
Benzo(a)pyrene	103		94		40-140	9		50
Benzo(ghi)perylene	96		89		40-140	8		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	105		101		25-120
Phenol-d6	116		112		10-120
Nitrobenzene-d5	**133**	Q	**130**	Q	23-120
2-Fluorobiphenyl	76		73		30-120
2,4,6-Tribromophenol	101		92		10-136
4-Terphenyl-d14	85		80		18-120

METALS

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126144
Project Number: 200.00135.005
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-01
Client ID: PB-666-14-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/18/21 09:05
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	103		mg/kg	2.42	0.130	1	05/27/21 07:30	05/27/21 15:45	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126144
Project Number: 200.00135.005
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-02
Client ID: PB-666-12-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 09:55
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 69%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6170		mg/kg	5.64	0.302	2	05/27/21 07:30	05/27/21 17:47	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126144
Project Number: 200.00135.005
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-03
Client ID: PB-666-11-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 10:05
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 78%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	253		mg/kg	2.49	0.134	1	05/27/21 07:30	05/27/21 15:40	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126144
Project Number: 200.00135.005
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-04
Client ID: PB-666-07-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/18/21 10:19
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 68%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	49.7		mg/kg	2.88	0.154	1	05/27/21 07:30	05/27/21 17:10	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126144
Project Number: 200.00135.005
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-05
Client ID: PB-666-04-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/18/21 10:35
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4310		mg/kg	4.34	0.232	2	05/27/21 07:30	05/27/21 18:42	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126144
Project Number: 200.00135.005
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-06
Client ID: PB-666-02-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/18/21 10:50
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	910		mg/kg	2.18	0.117	1	05/27/21 07:30	05/27/21 17:21	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126144
Project Number: 200.00135.005
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-07
Client ID: PB-666-01-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/18/21 11:10
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	653		mg/kg	2.22	0.119	1	05/27/21 07:30	05/27/21 17:26	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126144
Project Number: 200.00135.005
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-08
Client ID: PB-663-11-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/18/21 11:50
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 72%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1010		mg/kg	2.64	0.141	1	05/27/21 07:30	05/27/21 17:31	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126144
Project Number: 200.00135.005
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-09
Client ID: PB-666-03-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/21 12:05
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 53%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	8660		mg/kg	7.10	0.380	2	05/27/21 07:30	05/27/21 18:47	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126144
Project Number: 200.00135.005
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-10
Client ID: PB-666-15-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/18/21 12:15
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 78%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	784		mg/kg	2.50	0.134	1	05/27/21 07:30	05/27/21 17:41	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126144
Project Number: 200.00135.005
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-11
Client ID: PB-666-16-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/18/21 12:30
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5200		mg/kg	4.75	0.255	2	05/27/21 07:30	05/27/21 19:11	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126144
Project Number: 200.00135.005
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-12
Client ID: PB-666-17-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/18/21 12:45
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 68%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	456		mg/kg	2.85	0.152	1	05/27/21 07:30	05/27/21 18:07	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126144
Project Number: 200.00135.005
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-13
Client ID: PB-666-18-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/18/21 13:20
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	375		mg/kg	2.45	0.132	1	05/27/21 07:30	05/27/21 18:11	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126144
Project Number: 200.00135.005
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-14
Client ID: PB-666-19-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/18/21 13:35
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 70%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	60.3		mg/kg	2.80	0.150	1	05/27/21 07:30	05/27/21 18:16	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126144
Project Number: 200.00135.005
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-15
Client ID: PB-666-20-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/18/21 13:50
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 71%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	105		mg/kg	2.70	0.145	1	05/27/21 07:30	05/27/21 18:21	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126144
Project Number: 200.00135.005
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-16
Client ID: PB-666-21-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/18/21 14:00
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 53%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	16800		mg/kg	18.2	0.978	5	05/27/21 07:30	05/27/21 20:09	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126144
Project Number: 200.00135.005
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-17
Client ID: PB-666-22-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/18/21 14:40
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 54%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	89.0		mg/kg	3.65	0.196	1	05/27/21 07:30	05/27/21 18:31	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126144
Project Number: 200.00135.005
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-18
Client ID: DUP-01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/18/21 14:05
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 75%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	12100		mg/kg	12.8	0.685	5	05/27/21 07:30	05/27/21 19:21	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126144
Project Number: 200.00135.005
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-19
Client ID: FB-210518-1
Sample Location: PHILADELPHIA, PA
Date Collected: 05/18/21 14:45
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab											
Lead, Dissolved	ND		ug/l	1.000	0.3430	1	05/26/21 11:02	05/27/21 19:13	EPA 3005A	1,6020B	CD

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126144
Project Number: 200.00135.005
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-20
Client ID: FB-210518-2
Sample Location: PHILADELPHIA, PA
Date Collected: 05/18/21 14:50
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab											
Lead, Dissolved	ND		ug/l	1.000	0.3430	1	05/26/21 11:02	05/27/21 19:18	EPA 3005A	1,6020B	CD

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126144

Project Number: 200.00135.005 **Report Date:** 06/02/21

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-18 Batch: WG1501757-1										
Lead, Total	ND		mg/kg	2.00	0.107	1	05/27/21 07:30	05/27/21 17:01	1,6010D	SV

Prep Information

Digestion Method: EPA 3050B

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab for sample(s): 19-20 Batch: WG1503339-1										
Lead, Dissolved	ND		ug/l	1.000	0.3430	1	05/26/21 11:02	05/27/21 19:07	1,6020B	CD

Prep Information

Digestion Method: EPA 3005A

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126144

Report Date: 06/02/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-18 Batch: WG1501757-2 SRM Lot Number: D109-540								
Lead, Total	98		-		72-128	-		
Dissolved Metals - Mansfield Lab Associated sample(s): 19-20 Batch: WG1503339-2								
Lead, Dissolved	102		-		80-120	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005

Lab Number: L2126144
Report Date: 06/02/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-18 QC Batch ID: WG1501757-3 QC Sample: L2126144-01 Client ID: PB-666-14-SS01												
Lead, Total	103	50	156	106		-	-		75-125	-		20
Dissolved Metals - Mansfield Lab Associated sample(s): 19-20 QC Batch ID: WG1503339-3 QC Sample: L2126127-01 Client ID: MS Sample												
Lead, Dissolved	ND	510	545.1	107		-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126144

Report Date: 06/02/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-18 QC Batch ID: WG1501757-4 QC Sample: L2126144-01 Client ID: PB-666-14-SS01						
Lead, Total	103	116	mg/kg	12		20

INORGANICS
&
MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126144
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-01
Client ID: PB-666-14-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/18/21 09:05
Date Received: 05/18/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	79.0		%	0.100	NA	1	-	05/20/21 09:39	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126144
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-02
Client ID: PB-666-12-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/18/21 09:55
Date Received: 05/18/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	69.0		%	0.100	NA	1	-	05/20/21 09:39	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126144
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-03
Client ID: PB-666-11-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/18/21 10:05
Date Received: 05/18/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	78.1		%	0.100	NA	1	-	05/20/21 09:39	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126144
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-04
Client ID: PB-666-07-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/18/21 10:19
Date Received: 05/18/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	67.7		%	0.100	NA	1	-	05/20/21 09:39	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126144
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-05
Client ID: PB-666-04-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/18/21 10:35
Date Received: 05/18/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	90.8		%	0.100	NA	1	-	05/20/21 09:39	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126144
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-06
Client ID: PB-666-02-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/18/21 10:50
Date Received: 05/18/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.7		%	0.100	NA	1	-	05/20/21 09:39	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126144
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-07
Client ID: PB-666-01-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/18/21 11:10
Date Received: 05/18/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.9		%	0.100	NA	1	-	05/20/21 09:39	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126144
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-08
Client ID: PB-663-11-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/18/21 11:50
Date Received: 05/18/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	71.9		%	0.100	NA	1	-	05/20/21 09:39	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126144
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-09
Client ID: PB-666-03-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/18/21 12:05
Date Received: 05/18/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	52.9		%	0.100	NA	1	-	05/20/21 09:39	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126144
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-10
Client ID: PB-666-15-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/18/21 12:15
Date Received: 05/18/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	77.5		%	0.100	NA	1	-	05/20/21 09:39	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126144
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-11
Client ID: PB-666-16-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/18/21 12:30
Date Received: 05/18/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.9		%	0.100	NA	1	-	05/20/21 09:39	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126144
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-12
Client ID: PB-666-17-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/18/21 12:45
Date Received: 05/18/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	68.4		%	0.100	NA	1	-	05/20/21 09:39	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126144
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-13
Client ID: PB-666-18-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/18/21 13:20
Date Received: 05/18/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.0		%	0.100	NA	1	-	05/20/21 09:39	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126144
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-14
Client ID: PB-666-19-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/18/21 13:35
Date Received: 05/18/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	70.4		%	0.100	NA	1	-	05/20/21 09:39	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126144
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-15
Client ID: PB-666-20-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/18/21 13:50
Date Received: 05/18/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	71.1		%	0.100	NA	1	-	05/20/21 09:39	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126144
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-16
Client ID: PB-666-21-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/18/21 14:00
Date Received: 05/18/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	52.7		%	0.100	NA	1	-	05/20/21 09:39	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126144
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-17
Client ID: PB-666-22-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/18/21 14:40
Date Received: 05/18/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	54.1		%	0.100	NA	1	-	05/20/21 09:39	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126144
Report Date: 06/02/21

SAMPLE RESULTS

Lab ID: L2126144-18
Client ID: DUP-01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/18/21 14:05
Date Received: 05/18/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	75.1		%	0.100	NA	1	-	05/20/21 09:39	121,2540G	RI

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126144

Report Date: 06/02/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-18 QC Batch ID: WG1501385-1 QC Sample: L2126144-01 Client ID: PB-666-14-SS01						
Solids, Total	79.0	78.0	%	1		20

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005

Lab Number: L2126144
Report Date: 06/02/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2126144-01A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260HLW(14)
L2126144-01B	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-21 22:21	PA-8260HLW(14)
L2126144-01C	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-21 22:21	PA-8260HLW(14)
L2126144-01D	Plastic 2oz unpreserved for TS	A	NA		2.5	Y	Absent		TS(7)
L2126144-01E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)
L2126144-01F	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		PA-8270SIM(14)
L2126144-02A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260HLW(14)
L2126144-02B	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-21 22:21	PA-8260HLW(14)
L2126144-02C	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-21 22:21	PA-8260HLW(14)
L2126144-02D	Plastic 2oz unpreserved for TS	A	NA		2.5	Y	Absent		TS(7)
L2126144-02E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)
L2126144-02F	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		PA-8270SIM(14)
L2126144-03A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260HLW(14)
L2126144-03B	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-21 22:21	PA-8260HLW(14)
L2126144-03C	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-21 22:21	PA-8260HLW(14)
L2126144-03D	Plastic 2oz unpreserved for TS	A	NA		2.5	Y	Absent		TS(7)
L2126144-03E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)
L2126144-03F	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		PA-8270SIM(14)
L2126144-04A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260HLW(14)
L2126144-04B	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-21 22:21	PA-8260HLW(14)
L2126144-04C	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-21 22:21	PA-8260HLW(14)
L2126144-04D	Plastic 2oz unpreserved for TS	A	NA		2.5	Y	Absent		TS(7)

*Values in parentheses indicate holding time in days

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005

Lab Number: L2126144
Report Date: 06/02/21

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2126144-04E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)
L2126144-04F	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		PA-8270SIM(14)
L2126144-05A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2126144-05B	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-21 22:21	PA-8260H(14),PA-8260HLW(14)
L2126144-05C	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-21 22:21	PA-8260H(14),PA-8260HLW(14)
L2126144-05D	Plastic 2oz unpreserved for TS	A	NA		2.5	Y	Absent		TS(7)
L2126144-05E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)
L2126144-05F	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		PA-8270SIM(14)
L2126144-06A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260HLW(14)
L2126144-06B	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-21 22:21	PA-8260HLW(14)
L2126144-06C	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-21 22:21	PA-8260HLW(14)
L2126144-06D	Plastic 2oz unpreserved for TS	A	NA		2.5	Y	Absent		TS(7)
L2126144-06E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)
L2126144-06F	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		PA-8270SIM(14)
L2126144-07A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260HLW(14)
L2126144-07B	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-21 22:21	PA-8260HLW(14)
L2126144-07C	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-21 22:21	PA-8260HLW(14)
L2126144-07D	Plastic 2oz unpreserved for TS	A	NA		2.5	Y	Absent		TS(7)
L2126144-07E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)
L2126144-07F	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		PA-8270SIM(14)
L2126144-08A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260HLW(14)
L2126144-08B	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-21 22:21	PA-8260HLW(14)
L2126144-08C	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-21 22:21	PA-8260HLW(14)
L2126144-08D	Plastic 2oz unpreserved for TS	A	NA		2.5	Y	Absent		TS(7)
L2126144-08E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)
L2126144-08F	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		PA-8270SIM(14)
L2126144-09A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260HLW(14)
L2126144-09B	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-21 22:21	PA-8260HLW(14)

*Values in parentheses indicate holding time in days

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005

Lab Number: L2126144
Report Date: 06/02/21

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2126144-09C	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-21 22:21	PA-8260HLW(14)
L2126144-09D	Plastic 2oz unpreserved for TS	A	NA		2.5	Y	Absent		TS(7)
L2126144-09E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)
L2126144-09F	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		PA-8270SIM(14)
L2126144-10A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260HLW(14)
L2126144-10B	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-21 22:21	PA-8260HLW(14)
L2126144-10C	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-21 22:21	PA-8260HLW(14)
L2126144-10D	Plastic 2oz unpreserved for TS	A	NA		2.5	Y	Absent		TS(7)
L2126144-10E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)
L2126144-10F	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		PA-8270SIM(14)
L2126144-11A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260HLW(14)
L2126144-11B	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-21 22:21	PA-8260HLW(14)
L2126144-11C	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-21 22:21	PA-8260HLW(14)
L2126144-11D	Plastic 2oz unpreserved for TS	A	NA		2.5	Y	Absent		TS(7)
L2126144-11E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)
L2126144-11F	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		PA-8270SIM(14)
L2126144-12A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260HLW(14)
L2126144-12B	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-21 22:21	PA-8260HLW(14)
L2126144-12C	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-21 22:21	PA-8260HLW(14)
L2126144-12D	Plastic 2oz unpreserved for TS	A	NA		2.5	Y	Absent		TS(7)
L2126144-12E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)
L2126144-12F	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		PA-8270SIM(14)
L2126144-13A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260HLW(14)
L2126144-13B	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-21 22:21	PA-8260HLW(14)
L2126144-13C	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-21 22:21	PA-8260HLW(14)
L2126144-13D	Plastic 2oz unpreserved for TS	A	NA		2.5	Y	Absent		TS(7)
L2126144-13E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)
L2126144-13F	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		PA-8270SIM(14)

*Values in parentheses indicate holding time in days

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005

Lab Number: L2126144
Report Date: 06/02/21

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2126144-14A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260HLW(14)
L2126144-14B	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-21 22:21	PA-8260HLW(14)
L2126144-14C	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-21 22:21	PA-8260HLW(14)
L2126144-14D	Plastic 2oz unpreserved for TS	A	NA		2.5	Y	Absent		TS(7)
L2126144-14E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)
L2126144-14F	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		PA-8270SIM(14)
L2126144-15A	Vial MeOH preserved	B	NA		4.2	Y	Absent		PA-8260HLW(14)
L2126144-15B	Vial water preserved	B	NA		4.2	Y	Absent	19-MAY-21 22:21	PA-8260HLW(14)
L2126144-15C	Vial water preserved	B	NA		4.2	Y	Absent	19-MAY-21 22:21	PA-8260HLW(14)
L2126144-15D	Plastic 2oz unpreserved for TS	B	NA		4.2	Y	Absent		TS(7)
L2126144-15E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.2	Y	Absent		PB-TI(180)
L2126144-15F	Glass 120ml/4oz unpreserved	B	NA		4.2	Y	Absent		PA-8270SIM(14)
L2126144-16A	Vial MeOH preserved	B	NA		4.2	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2126144-16B	Vial water preserved	B	NA		4.2	Y	Absent	19-MAY-21 22:21	PA-8260H(14),PA-8260HLW(14)
L2126144-16C	Vial water preserved	B	NA		4.2	Y	Absent	19-MAY-21 22:21	PA-8260H(14),PA-8260HLW(14)
L2126144-16D	Plastic 2oz unpreserved for TS	B	NA		4.2	Y	Absent		TS(7)
L2126144-16E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.2	Y	Absent		PB-TI(180)
L2126144-16F	Glass 120ml/4oz unpreserved	B	NA		4.2	Y	Absent		PA-8270SIM(14)
L2126144-17A	Vial MeOH preserved	B	NA		4.2	Y	Absent		PA-8260HLW(14)
L2126144-17B	Vial water preserved	B	NA		4.2	Y	Absent	19-MAY-21 22:21	PA-8260HLW(14)
L2126144-17C	Vial water preserved	B	NA		4.2	Y	Absent	19-MAY-21 22:21	PA-8260HLW(14)
L2126144-17D	Plastic 2oz unpreserved for TS	B	NA		4.2	Y	Absent		TS(7)
L2126144-17E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.2	Y	Absent		PB-TI(180)
L2126144-17F	Glass 120ml/4oz unpreserved	B	NA		4.2	Y	Absent		PA-8270SIM(14)
L2126144-18A	Vial MeOH preserved	B	NA		4.2	Y	Absent		PA-8260HLW(14)
L2126144-18B	Vial water preserved	B	NA		4.2	Y	Absent	19-MAY-21 22:21	PA-8260HLW(14)
L2126144-18C	Vial water preserved	B	NA		4.2	Y	Absent	19-MAY-21 22:21	PA-8260HLW(14)
L2126144-18D	Plastic 2oz unpreserved for TS	B	NA		4.2	Y	Absent		TS(7)

*Values in parentheses indicate holding time in days

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005

Lab Number: L2126144
Report Date: 06/02/21

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2126144-18E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.2	Y	Absent		PB-TI(180)
L2126144-18F	Glass 120ml/4oz unpreserved	B	NA		4.2	Y	Absent		PA-8270SIM(14)
L2126144-19C	Vial HCl preserved	B	NA		4.2	Y	Absent		PA-8260(14)
L2126144-19D	Vial HCl preserved	B	NA		4.2	Y	Absent		PA-8260(14)
L2126144-19E	Vial HCl preserved	B	NA		4.2	Y	Absent		PA-8260(14)
L2126144-19F	Vial Na2S2O3 preserved	B	NA		4.2	Y	Absent		8011(14)
L2126144-19G	Vial Na2S2O3 preserved	B	NA		4.2	Y	Absent		8011(14)
L2126144-19H	Plastic 250ml unpreserved	B	6	6	4.2	Y	Absent		-
L2126144-19I	Amber 250ml unpreserved	B	6	6	4.2	Y	Absent		PA-8270SIM-LVI(7)
L2126144-19J	Amber 250ml unpreserved	B	6	6	4.2	Y	Absent		PA-8270SIM-LVI(7)
L2126144-19X	Plastic 120ml HNO3 preserved Filtrates	B	NA		4.2	Y	Absent		PB-6020S-PPB(180)
L2126144-20A	Vial HCl preserved	B	NA		4.2	Y	Absent		PA-8260(14)
L2126144-20B	Vial HCl preserved	B	NA		4.2	Y	Absent		PA-8260(14)
L2126144-20C	Vial HCl preserved	B	NA		4.2	Y	Absent		PA-8260(14)
L2126144-20D	Vial Na2S2O3 preserved	B	NA		4.2	Y	Absent		8011(14)
L2126144-20E	Vial Na2S2O3 preserved	B	NA		4.2	Y	Absent		8011(14)
L2126144-20F	Plastic 250ml unpreserved	B	6	6	4.2	Y	Absent		-
L2126144-20G	Amber 250ml unpreserved	B	6	6	4.2	Y	Absent		PA-8270SIM-LVI(7)
L2126144-20H	Amber 250ml unpreserved	B	6	6	4.2	Y	Absent		PA-8270SIM-LVI(7)
L2126144-20X	Plastic 120ml HNO3 preserved Filtrates	B	NA		4.2	Y	Absent		PB-6020S-PPB(180)
L2126144-21A	Vial Na2S2O3 preserved	B	NA		4.2	Y	Absent		8011(14)
L2126144-21B	Vial Na2S2O3 preserved	B	NA		4.2	Y	Absent		8011(14)
L2126144-21C	Vial HCl preserved	B	NA		4.2	Y	Absent		PA-8260(14)
L2126144-21D	Vial HCl preserved	B	NA		4.2	Y	Absent		PA-8260(14)

*Values in parentheses indicate holding time in days

Project Name:	PHILADELPHIA REFINERY-AST CLOS	**Lab Number:**	L2126144
Project Number:	200.00135.005	**Report Date:**	06/02/21

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY-AST CLOS	**Lab Number:**	L2126144
Project Number:	200.00135.005	**Report Date:**	06/02/21

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. (Note: 'PFAS, Total (6)' is applicable to MassDEP DW compliance analysis only.). If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY-AST CLOS	**Lab Number:**	L2126144
Project Number:	200.00135.005	**Report Date:**	06/02/21

Data Qualifiers

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

Project Name:	PHILADELPHIA REFINERY-AST CLOS	**Lab Number:**	L2126144
Project Number:	200.00135.005	**Report Date:**	06/02/21

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

Serial_No:06022116:42

NEW JERSEY CHAIN OF CUSTODY

ALPHA

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 3 of 3

Date Rec'd in Lab: 5/19/21

ALPHA Job #: L2126144

Westborough, MA 01581, 8 Walkup Dr., TEL: 508-898-9220, FAX: 508-898-9193
Mansfield, MA 02048, 320 Forbes Blvd, TEL: 508-822-9300, FAX: 508-822-3288

Project Information

Project Name: Philadelphia Refinery - AST Closure
Project Location: Philadelphia, PA
Project #: 200.00135.005
(Use Project name as Project #) ☐
Project Manager: William Schmidt
ALPHAQuote #:

Client Information

Client: Ransom Consulting
Address: 2127 Hamilton Ave
Phone: 215-901-4974
Fax:
Email: William.Schmidt@Ransomenv

Deliverables

☐ NJ Full / Reduced
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☒ Other: Email, ADEX

Billing Information

☑ Same as Client Info
PO #

Regulatory Requirement

☐ SRS Residential/Non Residential
☐ SRS Impact to Groundwater
☐ NJ Ground Water Quality Standards
☐ NJ IGW SPLP Leachate Criteria
☐ Other

Site Information

Is this site impacted by Petroleum? Yes ☑
Petroleum Product:

Turn-Around Time

Standard ☑ Due Date:
Rush (only if pre approved) ☐ # of Days:

These samples have been previously analyzed by Alpha ☐

For EPH, selection is REQUIRED: ☐ Category 1 ☐ Category 2

For VOC, selection is REQUIRED: ☐ 1,4-Dioxane ☐ 8011

Other project specific requirements/comments:

Please specify Metals or TAL.

Sample Filtration: ☐ Done ☐ Lab to do
Preservation: ☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	PA-8270 SIM	Total Metals	TS	PA-8260 HLW	Sample Specific Comments	Total Bottles
26144-01	PB-666-14-SS01	5/18	905	S	JS	✓	✓	✓	✓		6
-02	PB-666-12-SS01	↓	955	S	↓	✓	✓	✓	✓		6
-03	PB-666-11-SS01	↓	1005	↓	↓	✓	✓	✓	✓		6
-04	PB-666-07-SS01	↓	1019	↓	↓	✓	✓	✓	✓		6
-05	PB-666-04-SS01	↓	1035	↓	↓	✓	✓	✓	✓		6
-06	PB-666-02-SS01	↓	1050	↓	↓	✓	✓	✓	✓		6
-07	PB-666-01-SS01	↓	1110	↓	↓	✓	✓	✓	✓		6
-08	PB-666-11-SS01	↓	1150	↓	↓	✓	✓	✓	✓		6
-09	PB-666-03-SS01	↓	1205	↓	↓	✓	✓	✓	✓		6
-10	PB-666-15-SS01	↓	1215	↓	↓	✓	✓	✓	✓		6

	PA-8270 SIM	Total Metals	TS	PA-8260 HLW
Container Type	A	A	P	V
Preservative	A	A	A	F

Preservative Code: A = None, B = HCl, C = HNO_3, D = H_2SO_4, E = NaOH, F = MeOH, G = $NaHSO_4$, H = $Na_2S_2O_3$, K/E = Zn Ac/NaOH, O = Other

Container Code: P = Plastic, A = Amber Glass, V = Vial, G = Glass, B = Bacteria Cup, C = Cube, O = Other, E = Encore, D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	5/18/21 16:12	[signature]	5/18/21 16:12
[signature]	5/18/21 18:00	[signature]	5/18/21 18:00
[signature]	5/18/21 2000	[signature]	5/19/21 01:45

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-14 HC (rev. 30-Sept-2013)

ALPHA ANALYTICAL

NEW JERSEY CHAIN OF CUSTODY

Westborough, MA 01581 — 8 Walkup Dr. — TEL: 508-898-9220 — FAX: 508-898-9193
Mansfield, MA 02048 — 320 Forbes Blvd — TEL: 508-822-9300 — FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 2 of 3

Date Rec'd in Lab: 5/19/21

ALPHA Job #: L2126144

Client Information
Client: RANSOM CONSULTING
Address: 2127 HAMILTON AVE
Phone: 215-901-4974
Fax:
Email: WILLIAM.SCHMIDT@RANSOMENV.COM

Project Information
Project Name: PHILADELPHIA REFINERY - AST CLOSURE
Project Location: PHILADELPHIA, PA
Project #: 200.00135.005
(Use Project name as Project #)
Project Manager: WILLIAM SCHMIDT
ALPHAQuote #:

Turn-Around Time
Standard ☑ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables
☐ NJ Full / Reduced
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☒ Other EMAIL, ADEX

Regulatory Requirement
☐ SRS Residential/Non Residential
☐ SRS Impact to Groundwater
☐ NJ Ground Water Quality Standards
☐ NJ IGW SPLP Leachate Criteria
☐ Other

Billing Information
☑ Same as Client Info
PO #

Site Information
Is this site impacted by Petroleum? Yes ☑
Petroleum Product:

These samples have been previously analyzed by Alpha ☐

For EPH, selection is REQUIRED:
☐ Category 1
☐ Category 2

For VOC, selection is REQUIRED:
☐ 1,4-Dioxane
☐ 8011

Other project specific requirements/comments:
Please specify Metals or TAL.

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	PA-8270 SIM	TOTAL METALS	TS	PA-8260 HLW	PA-8270SIM-LVI	DISSOLVED METALS	PA-8260	8011	Sample Specific Comments	Total Bottles
26144-11	PB-666-16-5501	5/18	1230	S	TS	✓	✓	✓	✓						6
-12	PB-666-17-5501		1245			✓	✓	✓	✓						6
-13	PB-666-18-5501		1320			✓	✓	✓	✓						6
-14	PB-666-19-5501		1335			✓	✓	✓	✓						6
-15	PB-666-20-5501		1350			✓	✓	✓	✓						6
-16	PB-666-21-5501		1400			✓	✓	✓	✓						6
-17	PB-666-22-5501		1440			✓	✓	✓	✓						6
-18	DUP-01		1405			✓	✓	✓	✓						6
-19	FB-210518-1		1445	GW	TS					✓	✓	✓	✓		8
-20	FB-210518-2	↓	1450	GW	TS					✓	✓	✓	✓		8

Preservative Code: A = None; B = HCl; C = HNO_3; D = H_2SO_4; E = NaOH; F = MeOH; G = $NaHSO_4$; H = $Na_2S_2O_3$; K/E = Zn Ac/NaOH; O = Other

Container Code: P = Plastic; A = Amber Glass; V = Vial; G = Glass; B = Bacteria Cup; C = Cube; O = Other; E = Encore; D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Container Type	A	A	P	V
Preservative	A	A	A	F

Relinquished By:	Date/Time	Received By:	Date/Time
	5/18/21 16:12		5/19/21 16:12
	5/18/21 1800		5/19/21 1800
	5/18-2130		
	0100		5/19/21 01:45

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-14 HC (rev. 30-Sept-2013)

NEW JERSEY CHAIN OF CUSTODY

ALPHA ANALYTICAL

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 3 of 3

Date Rec'd in Lab: 5/19/21

ALPHA Job #: L2126144

Client Information

Client: Ransom Consulting
Address: 2127 Hamilton Ave
Phone: 215-901-4574
Fax:
Email: William.Schmidt@Ransom

Project Information

Project Name: Philadelphia Refinery - AST Closure
Project Location: Philadelphia, PA
Project #: 200.00135.005
(Use Project name as Project #)
Project Manager: William Schmidt
ALPHAQuote #:

Turn-Around Time

Standard ☑ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables

☐ NJ Full / Reduced
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☒ Other Email, Adex

Regulatory Requirement

☐ SRS Residential/Non Residential
☐ SRS Impact to Groundwater
☐ NJ Ground Water Quality Standards
☐ NJ IGW SPLP Leachate Criteria
☐ Other

Billing Information

☐ Same as Client Info
PO #

Site Information

Is this site impacted by Petroleum? Yes ☑
Petroleum Product:

These samples have been previously analyzed by Alpha ☐

For EPH, selection is REQUIRED:
☐ Category 1
☐ Category 2

For VOC, selection is REQUIRED:
☐ 1,4-Dioxane
☐ 8011

Other project specific requirements/comments:

Please specify Metals or TAL.

ANALYSIS

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	Sample Specific Comments	Total # Bottles
26144-21	TB-210518	5/18					5

Container Type ☑
Preservative

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Relinquished By:	Date/Time	Received By:	Date/Time
	5/18/21 16:12		5/18/21 16:12
	5/18/21 18:0		5/18/21 18:0
	5/18 2100		5/18 2100
	5/19 0100		5/19/21 01:45

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-14 HC (rev. 30-Sept-2013)

ANALYTICAL REPORT

Lab Number:	L2126411
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY-AST CLOS
Project Number:	200.00135.005
Report Date:	06/08/21

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005

Lab Number: L2126411
Report Date: 06/08/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2126411-01	PB-666-23-SS01	SOIL	PHILADELPHIA, PA	05/19/21 07:45	05/19/21
L2126411-02	PB-666-24-SS01	SOIL	PHILADELPHIA, PA	05/19/21 08:10	05/19/21
L2126411-03	PB-666-25-SS01	SOIL	PHILADELPHIA, PA	05/19/21 08:30	05/19/21
L2126411-04	PB-666-06-SS01	SOIL	PHILADELPHIA, PA	05/19/21 08:45	05/19/21
L2126411-05	PB-668-01-SS01	SOIL	PHILADELPHIA, PA	05/19/21 09:05	05/19/21
L2126411-06	PB-668-02-SS01	SOIL	PHILADELPHIA, PA	05/19/21 09:20	05/19/21
L2126411-07	PB-668-03-SS01	SOIL	PHILADELPHIA, PA	05/19/21 09:40	05/19/21
L2126411-08	PB-668-04-SS01	SOIL	PHILADELPHIA, PA	05/19/21 10:02	05/19/21
L2126411-09	PB-668-05-SS01	SOIL	PHILADELPHIA, PA	05/19/21 10:45	05/19/21
L2126411-10	PB-663-01-SS01	SOIL	PHILADELPHIA, PA	05/19/21 11:00	05/19/21
L2126411-11	PB-663-02-SS01	SOIL	PHILADELPHIA, PA	05/19/21 11:10	05/19/21
L2126411-12	PB-663-03-SS01	SOIL	PHILADELPHIA, PA	05/19/21 12:15	05/19/21
L2126411-13	PB-663-04-SS01	SOIL	PHILADELPHIA, PA	05/19/21 12:30	05/19/21
L2126411-14	PB-663-05-SS01	SOIL	PHILADELPHIA, PA	05/19/21 12:50	05/19/21
L2126411-15	PB-663-06-SS01	SOIL	PHILADELPHIA, PA	05/19/21 13:15	05/19/21
L2126411-16	PB-663-07-SS01	SOIL	PHILADELPHIA, PA	05/19/21 13:25	05/19/21
L2126411-17	PB-668-06-SS01	SOIL	PHILADELPHIA, PA	05/19/21 13:45	05/19/21
L2126411-18	PB-668-07-SS01	SOIL	PHILADELPHIA, PA	05/19/21 14:20	05/19/21
L2126411-19	FB-210519-1	WATER	PHILADELPHIA, PA	05/19/21 14:30	05/19/21
L2126411-20	FB-210519-2	WATER	PHILADELPHIA, PA	05/19/21 14:45	05/19/21
L2126411-21	TB-210519	WATER	PHILADELPHIA, PA	05/19/21 15:12	05/19/21

Project Name:	PHILADELPHIA REFINERY-AST CLOS	**Lab Number:**	L2126411
Project Number:	200.00135.005	**Report Date:**	06/08/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	PHILADELPHIA REFINERY-AST CLOS	**Lab Number:**	L2126411
Project Number:	200.00135.005	**Report Date:**	06/08/21

Case Narrative (continued)

Report Submission

June 08, 2021: This final report includes the results of all requested analyses.

June 07, 2021: This is a preliminary report.

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Sample Receipt

L2126411-21: The analyses performed were specified by the project manager.

Volatile Organics

L2126411-12 and -15: The sample was analyzed as a High Level Methanol based upon screen results. The sample was then analyzed as a Low Level in order to achieve lower reporting limits. The results of both analyses are reported. Differences were noted between the results of the analyses which have been attributed to vial discrepancies.

L2126411-17: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (141%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

Semivolatile Organics by SIM

L2126411-02D, -07D, -09D, -11D, -14D, -16D, and -18D: The sample has elevated detection limits due to the dilution required by the sample matrix.

L2126411-02D, -04D, -07D, -10D, -12D, and -17D: The surrogate recoveries are below the acceptance criteria for nitrobenzene-d5 (0%), 2-fluorobiphenyl (0%), and 4-terphenyl-d14 (0%) due to the dilution required to quantitate the sample. Re-extraction was not required; therefore, the results of the original analysis are reported.

Project Name:	PHILADELPHIA REFINERY-AST CLOS	**Lab Number:**	L2126411
Project Number:	200.00135.005	**Report Date:**	06/08/21

Case Narrative (continued)

Total Metals

The WG1504100-3 MS recovery, performed on L2126411-01, is outside the acceptance criteria for lead (16%). A post digestion spike was performed and yielded an unacceptable recovery of 67%. The serial dilution recovery was not applicable; therefore, this element fails the matrix test and the result reported in the native sample should be considered estimated.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Caitlin Walukevich

Caitlin Walukevich

Title: Technical Director/Representative

Date: 06/08/21

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126411

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-01
Client ID: PB-666-23-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 07:45
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/25/21 12:51
Analyst: AJK
Percent Solids: 67%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0035	0.00035	1
Benzene	ND		mg/kg	0.00087	0.00029	1
1,2-Dichloroethane	ND		mg/kg	0.0017	0.00045	1
Toluene	ND		mg/kg	0.0017	0.00095	1
1,2-Dibromoethane	ND		mg/kg	0.00087	0.00051	1
Ethylbenzene	ND		mg/kg	0.0017	0.00025	1
p/m-Xylene	ND		mg/kg	0.0035	0.00098	1
o-Xylene	ND		mg/kg	0.0017	0.00051	1
Xylenes, Total	ND		mg/kg	0.0017	0.00051	1
Isopropylbenzene	ND		mg/kg	0.0017	0.00019	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0035	0.00034	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0035	0.00058	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	117		70-130
Dibromofluoromethane	80		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126411

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-02
Client ID: PB-666-24-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 08:10
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/25/21 13:17
Analyst: AJK
Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	0.0064		mg/kg	0.00060	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00031	1
Toluene	0.0032		mg/kg	0.0012	0.00065	1
1,2-Dibromoethane	ND		mg/kg	0.00060	0.00035	1
Ethylbenzene	0.025		mg/kg	0.0012	0.00017	1
p/m-Xylene	0.014		mg/kg	0.0024	0.00067	1
o-Xylene	0.013		mg/kg	0.0012	0.00035	1
Xylenes, Total	0.027		mg/kg	0.0012	0.00035	1
Isopropylbenzene	0.0030		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	0.019		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	0.091		mg/kg	0.0024	0.00040	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	112		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	130		70-130
Dibromofluoromethane	89		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126411

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-03
Client ID: PB-666-25-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 08:30
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/25/21 13:42
Analyst: AJK
Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00053	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00027	1
Toluene	ND		mg/kg	0.0011	0.00058	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00060	1
o-Xylene	ND		mg/kg	0.0011	0.00031	1
Xylenes, Total	ND		mg/kg	0.0011	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	117		70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126411

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-04
Client ID: PB-666-06-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 08:45
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/25/21 14:07
Analyst: AJK
Percent Solids: 56%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0031	0.00031	1
Benzene	ND		mg/kg	0.00077	0.00026	1
1,2-Dichloroethane	ND		mg/kg	0.0015	0.00040	1
Toluene	ND		mg/kg	0.0015	0.00084	1
1,2-Dibromoethane	ND		mg/kg	0.00077	0.00045	1
Ethylbenzene	ND		mg/kg	0.0015	0.00022	1
p/m-Xylene	ND		mg/kg	0.0031	0.00087	1
o-Xylene	ND		mg/kg	0.0015	0.00045	1
Xylenes, Total	ND		mg/kg	0.0015	0.00045	1
Isopropylbenzene	ND		mg/kg	0.0015	0.00017	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0031	0.00030	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0031	0.00052	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	115		70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126411

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-05
Client ID: PB-668-01-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 09:05
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/25/21 23:54
Analyst: JC
Percent Solids: 69%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0035	0.00035	1
Benzene	ND		mg/kg	0.00087	0.00029	1
1,2-Dichloroethane	ND		mg/kg	0.0017	0.00045	1
Toluene	ND		mg/kg	0.0017	0.00095	1
1,2-Dibromoethane	ND		mg/kg	0.00087	0.00051	1
Ethylbenzene	ND		mg/kg	0.0017	0.00024	1
p/m-Xylene	ND		mg/kg	0.0035	0.00098	1
o-Xylene	ND		mg/kg	0.0017	0.00051	1
Xylenes, Total	ND		mg/kg	0.0017	0.00051	1
Isopropylbenzene	ND		mg/kg	0.0017	0.00019	1
1,3,5-Trimethylbenzene	0.00045	J	mg/kg	0.0035	0.00034	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0035	0.00058	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	119		70-130
Dibromofluoromethane	91		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126411

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-06
Client ID: PB-668-02-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 09:20
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/26/21 00:20
Analyst: JC
Percent Solids: 52%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0030	0.00030	1
Benzene	ND		mg/kg	0.00074	0.00024	1
1,2-Dichloroethane	ND		mg/kg	0.0015	0.00038	1
Toluene	ND		mg/kg	0.0015	0.00080	1
1,2-Dibromoethane	ND		mg/kg	0.00074	0.00043	1
Ethylbenzene	ND		mg/kg	0.0015	0.00021	1
p/m-Xylene	0.0024	J	mg/kg	0.0030	0.00083	1
o-Xylene	0.0011	J	mg/kg	0.0015	0.00043	1
Xylenes, Total	0.0035	J	mg/kg	0.0015	0.00043	1
Isopropylbenzene	ND		mg/kg	0.0015	0.00016	1
1,3,5-Trimethylbenzene	0.0060		mg/kg	0.0030	0.00028	1
1,2,4-Trimethylbenzene	0.012		mg/kg	0.0030	0.00049	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	117		70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126411

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-07
Client ID: PB-668-03-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 09:40
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/26/21 00:45
Analyst: JC
Percent Solids: 67%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0041	0.00041	1
Benzene	ND		mg/kg	0.0010	0.00034	1
1,2-Dichloroethane	ND		mg/kg	0.0020	0.00052	1
Toluene	ND		mg/kg	0.0020	0.0011	1
1,2-Dibromoethane	ND		mg/kg	0.0010	0.00060	1
Ethylbenzene	0.00084	J	mg/kg	0.0020	0.00029	1
p/m-Xylene	0.0032	J	mg/kg	0.0041	0.0011	1
o-Xylene	0.0050		mg/kg	0.0020	0.00059	1
Xylenes, Total	0.0082	J	mg/kg	0.0020	0.00059	1
Isopropylbenzene	0.00042	J	mg/kg	0.0020	0.00022	1
1,3,5-Trimethylbenzene	0.012		mg/kg	0.0041	0.00039	1
1,2,4-Trimethylbenzene	0.0078		mg/kg	0.0041	0.00068	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	128		70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126411

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-08
Client ID: PB-668-04-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 10:02
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/26/21 01:10
Analyst: JC
Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0026	0.00026	1
Benzene	ND		mg/kg	0.00066	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00034	1
Toluene	ND		mg/kg	0.0013	0.00071	1
1,2-Dibromoethane	ND		mg/kg	0.00066	0.00038	1
Ethylbenzene	ND		mg/kg	0.0013	0.00018	1
p/m-Xylene	ND		mg/kg	0.0026	0.00073	1
o-Xylene	ND		mg/kg	0.0013	0.00038	1
Xylenes, Total	ND		mg/kg	0.0013	0.00038	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0026	0.00025	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0026	0.00044	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	120		70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126411

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-09
Client ID: PB-668-05-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 10:45
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/26/21 01:35
Analyst: JC
Percent Solids: 69%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0044	0.00045	1
Benzene	ND		mg/kg	0.0011	0.00037	1
1,2-Dichloroethane	ND		mg/kg	0.0022	0.00057	1
Toluene	ND		mg/kg	0.0022	0.0012	1
1,2-Dibromoethane	ND		mg/kg	0.0011	0.00065	1
Ethylbenzene	ND		mg/kg	0.0022	0.00031	1
p/m-Xylene	ND		mg/kg	0.0044	0.0012	1
o-Xylene	ND		mg/kg	0.0022	0.00065	1
Xylenes, Total	ND		mg/kg	0.0022	0.00065	1
Isopropylbenzene	ND		mg/kg	0.0022	0.00024	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0044	0.00043	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0044	0.00074	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	119		70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126411

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-10
Client ID: PB-663-01-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 11:00
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/26/21 02:01
Analyst: JC
Percent Solids: 70%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0040	0.00041	1
Benzene	ND		mg/kg	0.0010	0.00034	1
1,2-Dichloroethane	ND		mg/kg	0.0020	0.00052	1
Toluene	0.0025		mg/kg	0.0020	0.0011	1
1,2-Dibromoethane	ND		mg/kg	0.0010	0.00059	1
Ethylbenzene	ND		mg/kg	0.0020	0.00028	1
p/m-Xylene	ND		mg/kg	0.0040	0.0011	1
o-Xylene	ND		mg/kg	0.0020	0.00059	1
Xylenes, Total	ND		mg/kg	0.0020	0.00059	1
Isopropylbenzene	ND		mg/kg	0.0020	0.00022	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0040	0.00039	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0040	0.00067	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	121		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126411

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-11
Client ID: PB-663-02-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 11:10
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/26/21 02:26
Analyst: JC
Percent Solids: 66%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.22	0.022	1
Benzene	0.10		mg/kg	0.056	0.018	1
1,2-Dichloroethane	ND		mg/kg	0.11	0.029	1
Toluene	4.4		mg/kg	0.11	0.060	1
1,2-Dibromoethane	ND		mg/kg	0.056	0.033	1
Ethylbenzene	0.038	J	mg/kg	0.11	0.016	1
p/m-Xylene	0.17	J	mg/kg	0.22	0.062	1
o-Xylene	0.098	J	mg/kg	0.11	0.032	1
Xylenes, Total	0.27	J	mg/kg	0.11	0.032	1
Isopropylbenzene	0.022	J	mg/kg	0.11	0.012	1
1,3,5-Trimethylbenzene	0.092	J	mg/kg	0.22	0.022	1
1,2,4-Trimethylbenzene	0.17	J	mg/kg	0.22	0.037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	115		70-130
Dibromofluoromethane	91		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126411

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-12
Client ID: PB-663-03-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 12:15
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/26/21 02:51
Analyst: JC
Percent Solids: 70%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.22	0.022	1
Benzene	0.27		mg/kg	0.055	0.018	1
1,2-Dichloroethane	ND		mg/kg	0.11	0.028	1
Toluene	2.8		mg/kg	0.11	0.060	1
1,2-Dibromoethane	ND		mg/kg	0.055	0.032	1
Ethylbenzene	0.034	J	mg/kg	0.11	0.016	1
p/m-Xylene	0.10	J	mg/kg	0.22	0.062	1
o-Xylene	0.043	J	mg/kg	0.11	0.032	1
Xylenes, Total	0.14	J	mg/kg	0.11	0.032	1
Isopropylbenzene	0.014	J	mg/kg	0.11	0.012	1
1,3,5-Trimethylbenzene	0.039	J	mg/kg	0.22	0.021	1
1,2,4-Trimethylbenzene	0.097	J	mg/kg	0.22	0.037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	115		70-130
Dibromofluoromethane	90		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126411

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-12
Client ID: PB-663-03-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 12:15
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/26/21 15:44
Analyst: MKS
Percent Solids: 70%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0026	0.00026	1
Benzene	0.0015		mg/kg	0.00064	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00033	1
Toluene	0.067		mg/kg	0.0013	0.00070	1
1,2-Dibromoethane	ND		mg/kg	0.00064	0.00038	1
Ethylbenzene	ND		mg/kg	0.0013	0.00018	1
p/m-Xylene	ND		mg/kg	0.0026	0.00072	1
o-Xylene	ND		mg/kg	0.0013	0.00038	1
Xylenes, Total	ND		mg/kg	0.0013	0.00038	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0026	0.00025	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0026	0.00043	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	115		70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126411

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-13
Client ID: PB-663-04-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 12:30
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/26/21 10:13
Analyst: MKS
Percent Solids: 68%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0035	0.00035	1
Benzene	0.00048	J	mg/kg	0.00087	0.00029	1
1,2-Dichloroethane	ND		mg/kg	0.0017	0.00045	1
Toluene	0.0011	J	mg/kg	0.0017	0.00095	1
1,2-Dibromoethane	ND		mg/kg	0.00087	0.00051	1
Ethylbenzene	ND		mg/kg	0.0017	0.00025	1
p/m-Xylene	ND		mg/kg	0.0035	0.00098	1
o-Xylene	ND		mg/kg	0.0017	0.00051	1
Xylenes, Total	ND		mg/kg	0.0017	0.00051	1
Isopropylbenzene	ND		mg/kg	0.0017	0.00019	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0035	0.00034	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0035	0.00058	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	108		70-130
4-Bromofluorobenzene	123		70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126411

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-14
Client ID: PB-663-05-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 12:50
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/26/21 10:38
Analyst: MKS
Percent Solids: 65%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0033	0.00033	1
Benzene	ND		mg/kg	0.00083	0.00027	1
1,2-Dichloroethane	ND		mg/kg	0.0016	0.00042	1
Toluene	ND		mg/kg	0.0016	0.00090	1
1,2-Dibromoethane	ND		mg/kg	0.00083	0.00048	1
Ethylbenzene	ND		mg/kg	0.0016	0.00023	1
p/m-Xylene	ND		mg/kg	0.0033	0.00093	1
o-Xylene	ND		mg/kg	0.0016	0.00048	1
Xylenes, Total	ND		mg/kg	0.0016	0.00048	1
Isopropylbenzene	ND		mg/kg	0.0016	0.00018	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0033	0.00032	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0033	0.00055	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	120		70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126411

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-15
Client ID: PB-663-06-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 13:15
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/26/21 09:48
Analyst: MKS
Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.15	0.015	1
Benzene	0.020	J	mg/kg	0.038	0.013	1
1,2-Dichloroethane	ND		mg/kg	0.077	0.020	1
Toluene	1.9		mg/kg	0.077	0.042	1
1,2-Dibromoethane	ND		mg/kg	0.038	0.022	1
Ethylbenzene	0.018	J	mg/kg	0.077	0.011	1
p/m-Xylene	0.065	J	mg/kg	0.15	0.043	1
o-Xylene	0.022	J	mg/kg	0.077	0.022	1
Xylenes, Total	0.087	J	mg/kg	0.077	0.022	1
Isopropylbenzene	ND		mg/kg	0.077	0.0084	1
1,3,5-Trimethylbenzene	0.017	J	mg/kg	0.15	0.015	1
1,2,4-Trimethylbenzene	0.063	J	mg/kg	0.15	0.026	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	113		70-130
Dibromofluoromethane	92		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126411

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-15
Client ID: PB-663-06-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 13:15
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/26/21 16:34
Analyst: MKS
Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0032	0.00032	1
Benzene	0.0060		mg/kg	0.00080	0.00027	1
1,2-Dichloroethane	ND		mg/kg	0.0016	0.00041	1
Toluene	0.30		mg/kg	0.0016	0.00087	1
1,2-Dibromoethane	ND		mg/kg	0.00080	0.00047	1
Ethylbenzene	0.00053	J	mg/kg	0.0016	0.00023	1
p/m-Xylene	0.0024	J	mg/kg	0.0032	0.00090	1
o-Xylene	0.0012	J	mg/kg	0.0016	0.00047	1
Xylenes, Total	0.0036	J	mg/kg	0.0016	0.00047	1
Isopropylbenzene	ND		mg/kg	0.0016	0.00018	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0032	0.00031	1
1,2,4-Trimethylbenzene	0.00075	J	mg/kg	0.0032	0.00054	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	118		70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126411

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-16
Client ID: PB-663-07-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 13:25
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/26/21 11:04
Analyst: MKS
Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0027	0.00027	1
Benzene	ND		mg/kg	0.00067	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00034	1
Toluene	ND		mg/kg	0.0013	0.00072	1
1,2-Dibromoethane	ND		mg/kg	0.00067	0.00039	1
Ethylbenzene	ND		mg/kg	0.0013	0.00019	1
p/m-Xylene	ND		mg/kg	0.0027	0.00075	1
o-Xylene	ND		mg/kg	0.0013	0.00039	1
Xylenes, Total	ND		mg/kg	0.0013	0.00039	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0027	0.00026	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0027	0.00044	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	117		70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126411

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-17
Client ID: PB-668-06-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 13:45
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/27/21 01:59
Analyst: JC
Percent Solids: 68%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.26	0.026	1
Benzene	0.36		mg/kg	0.066	0.022	1
1,2-Dichloroethane	ND		mg/kg	0.13	0.034	1
Toluene	2.7		mg/kg	0.13	0.072	1
1,2-Dibromoethane	ND		mg/kg	0.066	0.039	1
Ethylbenzene	1.3		mg/kg	0.13	0.019	1
p/m-Xylene	7.8		mg/kg	0.26	0.074	1
o-Xylene	5.2		mg/kg	0.13	0.038	1
Xylenes, Total	13.		mg/kg	0.13	0.038	1
Isopropylbenzene	1.5		mg/kg	0.13	0.014	1
1,3,5-Trimethylbenzene	13.		mg/kg	0.26	0.025	1
1,2,4-Trimethylbenzene	38.		mg/kg	0.26	0.044	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	112		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	**141**	Q	70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126411

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-18
Client ID: PB-668-07-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 14:20
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/26/21 11:29
Analyst: MKS
Percent Solids: 68%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0048	0.00049	1
Benzene	ND		mg/kg	0.0012	0.00040	1
1,2-Dichloroethane	ND		mg/kg	0.0024	0.00062	1
Toluene	ND		mg/kg	0.0024	0.0013	1
1,2-Dibromoethane	ND		mg/kg	0.0012	0.00071	1
Ethylbenzene	ND		mg/kg	0.0024	0.00034	1
p/m-Xylene	ND		mg/kg	0.0048	0.0014	1
o-Xylene	ND		mg/kg	0.0024	0.00070	1
Xylenes, Total	ND		mg/kg	0.0024	0.00070	1
Isopropylbenzene	ND		mg/kg	0.0024	0.00026	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0048	0.00047	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0048	0.00081	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	125		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126411
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-19
Client ID: FB-210519-1
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 14:30
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8011
Analytical Date: 05/24/21 17:30
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 05/24/21 15:38

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	B

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126411
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-19
Client ID: FB-210519-1
Sample Location: PHILADELPHIA, PA
Date Collected: 05/19/21 14:30
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 05/25/21 10:33
Analyst: KTD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	88		70-130
4-Bromofluorobenzene	79		70-130
Dibromofluoromethane	117		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126411
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-20
Client ID: FB-210519-2
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 14:45
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8011
Analytical Date: 05/24/21 17:36
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 05/24/21 15:38

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	B

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126411
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-20
Client ID: FB-210519-2
Sample Location: PHILADELPHIA, PA
Date Collected: 05/19/21 14:45
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 05/25/21 10:59
Analyst: KTD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	113		70-130
Toluene-d8	88		70-130
4-Bromofluorobenzene	79		70-130
Dibromofluoromethane	122		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126411
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-21
Client ID: TB-210519
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 15:12
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8011
Analytical Date: 05/24/21 17:43
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 05/24/21 15:38

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	B

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126411

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-21
Client ID: TB-210519
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 15:12
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 05/25/21 11:25
Analyst: KTD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	89		70-130
4-Bromofluorobenzene	78		70-130
Dibromofluoromethane	115		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126411
Report Date: 06/08/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8011
Analytical Date: 05/24/21 16:40
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 05/24/21 15:38

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 19-21 Batch: WG1502976-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.005	B

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126411

Project Number: 200.00135.005 **Report Date:** 06/08/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 05/25/21 06:59
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01-04 Batch: WG1503563-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	115		70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126411

Project Number: 200.00135.005 **Report Date:** 06/08/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 05/25/21 08:53
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 19-21 Batch: WG1503616-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	89		70-130
4-Bromofluorobenzene	78		70-130
Dibromofluoromethane	121		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126411

Project Number: 200.00135.005 **Report Date:** 06/08/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 05/25/21 18:27
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 05-10 Batch: WG1504039-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	114		70-130
Dibromofluoromethane	91		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126411

Project Number: 200.00135.005 **Report Date:** 06/08/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 05/26/21 08:07
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 15 Batch: WG1504145-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	113		70-130
Dibromofluoromethane	92		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126411

Project Number: 200.00135.005 **Report Date:** 06/08/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 05/26/21 08:07
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 12-16,18 Batch: WG1504146-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	113		70-130
Dibromofluoromethane	92		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126411

Project Number: 200.00135.005 **Report Date:** 06/08/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 05/26/21 20:32
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 17 Batch: WG1504369-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	115		70-130
Dibromofluoromethane	93		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126411

Report Date: 06/08/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab	Associated sample(s): 19-21 Batch: WG1502976-2								
1,2-Dibromoethane	90		-		80-120	-		20	B

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126411

Report Date: 06/08/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01-04 Batch: WG1503563-3 WG1503563-4								
Methyl tert butyl ether	123		116		66-130	6		30
Benzene	119		107		70-130	11		30
1,2-Dichloroethane	119		111		70-130	7		30
Toluene	118		106		70-130	11		30
1,2-Dibromoethane	114		109		70-130	4		30
Ethylbenzene	116		104		70-130	11		30
p/m-Xylene	107		97		70-130	10		30
o-Xylene	107		97		70-130	10		30
Isopropylbenzene	118		107		70-130	10		30
1,3,5-Trimethylbenzene	116		105		70-130	10		30
1,2,4-Trimethylbenzene	114		102		70-130	11		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	103		105		70-130
Toluene-d8	105		105		70-130
4-Bromofluorobenzene	114		115		70-130
Dibromofluoromethane	93		93		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126411

Report Date: 06/08/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 19-21 Batch: WG1503616-3 WG1503616-4								
Methyl tert butyl ether	89		89		63-130	0		20
Benzene	96		90		70-130	6		20
1,2-Dichloroethane	100		100		70-130	0		20
Toluene	91		86		70-130	6		20
Ethylbenzene	93		91		70-130	2		20
p/m-Xylene	100		95		70-130	5		20
o-Xylene	95		95		70-130	0		20
Isopropylbenzene	88		86		70-130	2		20
1,3,5-Trimethylbenzene	88		84		64-130	5		20
1,2,4-Trimethylbenzene	88		85		70-130	3		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	96		100		70-130
Toluene-d8	89		90		70-130
4-Bromofluorobenzene	76		79		70-130
Dibromofluoromethane	110		112		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126411

Report Date: 06/08/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 05-10 Batch: WG1504039-3 WG1504039-4								
Methyl tert butyl ether	116		120		66-130	3		30
Benzene	116		118		70-130	2		30
1,2-Dichloroethane	110		115		70-130	4		30
Toluene	116		116		70-130	0		30
1,2-Dibromoethane	106		111		70-130	5		30
Ethylbenzene	114		115		70-130	1		30
p/m-Xylene	105		106		70-130	1		30
o-Xylene	103		105		70-130	2		30
Isopropylbenzene	118		118		70-130	0		30
1,3,5-Trimethylbenzene	114		113		70-130	1		30
1,2,4-Trimethylbenzene	112		111		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	101		102		70-130
Toluene-d8	105		106		70-130
4-Bromofluorobenzene	115		114		70-130
Dibromofluoromethane	92		93		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126411

Report Date: 06/08/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 11-12 Batch: WG1504040-3 WG1504040-4								
Methyl tert butyl ether	116		120		66-130	3		30
Benzene	116		118		70-130	2		30
1,2-Dichloroethane	110		115		70-130	4		30
Toluene	116		116		70-130	0		30
1,2-Dibromoethane	106		111		70-130	5		30
Ethylbenzene	114		115		70-130	1		30
p/m-Xylene	105		106		70-130	1		30
o-Xylene	103		105		70-130	2		30
Isopropylbenzene	118		118		70-130	0		30
1,3,5-Trimethylbenzene	114		113		70-130	1		30
1,2,4-Trimethylbenzene	112		111		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	101		102		70-130
Toluene-d8	105		106		70-130
4-Bromofluorobenzene	114		114		70-130
Dibromofluoromethane	92		93		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126411

Report Date: 06/08/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 15 Batch: WG1504145-3 WG1504145-4								
Methyl tert butyl ether	118		119		66-130	1		30
Benzene	116		113		70-130	3		30
1,2-Dichloroethane	113		113		70-130	0		30
Toluene	115		112		70-130	3		30
1,2-Dibromoethane	109		110		70-130	1		30
Ethylbenzene	113		110		70-130	3		30
p/m-Xylene	104		101		70-130	3		30
o-Xylene	103		101		70-130	2		30
Isopropylbenzene	117		111		70-130	5		30
1,3,5-Trimethylbenzene	113		109		70-130	4		30
1,2,4-Trimethylbenzene	111		107		70-130	4		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	101		102		70-130
Toluene-d8	106		106		70-130
4-Bromofluorobenzene	113		113		70-130
Dibromofluoromethane	92		92		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126411

Report Date: 06/08/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 12-16,18 Batch: WG1504146-3 WG1504146-4								
Methyl tert butyl ether	118		119		66-130	1		30
Benzene	116		113		70-130	3		30
1,2-Dichloroethane	113		113		70-130	0		30
Toluene	115		112		70-130	3		30
1,2-Dibromoethane	109		110		70-130	1		30
Ethylbenzene	113		110		70-130	3		30
p/m-Xylene	104		101		70-130	3		30
o-Xylene	103		101		70-130	2		30
Isopropylbenzene	117		111		70-130	5		30
1,3,5-Trimethylbenzene	113		109		70-130	4		30
1,2,4-Trimethylbenzene	111		107		70-130	4		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	101		102		70-130
Toluene-d8	106		106		70-130
4-Bromofluorobenzene	113		113		70-130
Dibromofluoromethane	92		92		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126411

Report Date: 06/08/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 17 Batch: WG1504369-3 WG1504369-4								
Methyl tert butyl ether	119		119		66-130	0		30
Benzene	118		119		70-130	1		30
1,2-Dichloroethane	115		115		70-130	0		30
Toluene	120		121		70-130	1		30
1,2-Dibromoethane	111		111		70-130	0		30
Ethylbenzene	117		118		70-130	1		30
p/m-Xylene	109		110		70-130	1		30
o-Xylene	108		109		70-130	1		30
Isopropylbenzene	118		120		70-130	2		30
1,3,5-Trimethylbenzene	118		120		70-130	2		30
1,2,4-Trimethylbenzene	117		118		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	103		100		70-130
Toluene-d8	105		106		70-130
4-Bromofluorobenzene	114		114		70-130
Dibromofluoromethane	92		92		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126411
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-01
Client ID: PB-666-23-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 07:45
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/01/21 14:06
Analyst: DV
Percent Solids: 67%

Extraction Method: EPA 3546
Extraction Date: 05/31/21 08:20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.019		mg/kg	0.0099	0.0018	1
Fluorene	0.0046	J	mg/kg	0.0099	0.0012	1
Phenanthrene	0.024		mg/kg	0.0099	0.00084	1
Anthracene	0.0046	J	mg/kg	0.0099	0.00079	1
Pyrene	0.017		mg/kg	0.0099	0.00069	1
Benzo(a)anthracene	0.017		mg/kg	0.0099	0.00094	1
Chrysene	0.013		mg/kg	0.0099	0.00074	1
Benzo(b)fluoranthene	0.014		mg/kg	0.0099	0.00094	1
Benzo(a)pyrene	0.013		mg/kg	0.0099	0.0012	1
Benzo(ghi)perylene	0.0074	J	mg/kg	0.0099	0.00084	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	86		23-120
2-Fluorobiphenyl	64		30-120
4-Terphenyl-d14	48		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126411
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-02 D
Client ID: PB-666-24-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 08:10
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/02/21 16:31
Analyst: RP
Percent Solids: 83%

Extraction Method: EPA 3546
Extraction Date: 05/31/21 08:20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	5.7		mg/kg	0.20	0.035	25
Fluorene	2.9		mg/kg	0.20	0.024	25
Phenanthrene	8.0		mg/kg	0.20	0.017	25
Anthracene	1.5		mg/kg	0.20	0.016	25
Pyrene	4.5		mg/kg	0.20	0.014	25
Benzo(a)anthracene	2.3		mg/kg	0.20	0.019	25
Chrysene	3.3		mg/kg	0.20	0.015	25
Benzo(b)fluoranthene	0.85		mg/kg	0.20	0.019	25
Benzo(a)pyrene	1.6		mg/kg	0.20	0.024	25
Benzo(ghi)perylene	0.61		mg/kg	0.20	0.017	25

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	**0**	Q	23-120
2-Fluorobiphenyl	**0**	Q	30-120
4-Terphenyl-d14	**0**	Q	18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126411
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-03
Client ID: PB-666-25-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 08:30
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/01/21 14:22
Analyst: DV
Percent Solids: 85%

Extraction Method: EPA 3546
Extraction Date: 05/31/21 08:20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.070		mg/kg	0.0076	0.0014	1
Fluorene	0.029		mg/kg	0.0076	0.00091	1
Phenanthrene	0.20		mg/kg	0.0076	0.00064	1
Anthracene	0.056		mg/kg	0.0076	0.00061	1
Pyrene	0.36		mg/kg	0.0076	0.00053	1
Benzo(a)anthracene	0.27		mg/kg	0.0076	0.00072	1
Chrysene	0.24		mg/kg	0.0076	0.00057	1
Benzo(b)fluoranthene	0.31		mg/kg	0.0076	0.00072	1
Benzo(a)pyrene	0.26		mg/kg	0.0076	0.00091	1
Benzo(ghi)perylene	0.16		mg/kg	0.0076	0.00064	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	93		23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	61		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126411

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-04 D
Client ID: PB-666-06-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 08:45
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/02/21 16:47
Analyst: RP
Percent Solids: 56%

Extraction Method: EPA 3546
Extraction Date: 05/31/21 08:20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.55	J	mg/kg	0.57	0.10	50
Fluorene	1.2		mg/kg	0.57	0.069	50
Phenanthrene	22.		mg/kg	0.57	0.049	50
Anthracene	7.5		mg/kg	0.57	0.046	50
Pyrene	39.		mg/kg	0.57	0.040	50
Benzo(a)anthracene	34.		mg/kg	0.57	0.055	50
Chrysene	27.		mg/kg	0.57	0.043	50
Benzo(b)fluoranthene	47.		mg/kg	0.57	0.055	50
Benzo(a)pyrene	36.		mg/kg	0.57	0.069	50
Benzo(ghi)perylene	29.		mg/kg	0.57	0.049	50

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	**0**	Q	23-120
2-Fluorobiphenyl	**0**	Q	30-120
4-Terphenyl-d14	**0**	Q	18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126411

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-05
Client ID: PB-668-01-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 09:05
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/01/21 14:39
Analyst: DV
Percent Solids: 69%

Extraction Method: EPA 3546
Extraction Date: 05/31/21 08:20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.026		mg/kg	0.0095	0.0017	1
Fluorene	0.018		mg/kg	0.0095	0.0011	1
Phenanthrene	0.045		mg/kg	0.0095	0.00081	1
Anthracene	0.0089	J	mg/kg	0.0095	0.00076	1
Pyrene	0.020		mg/kg	0.0095	0.00066	1
Benzo(a)anthracene	0.0028	J	mg/kg	0.0095	0.00090	1
Chrysene	0.0024	J	mg/kg	0.0095	0.00071	1
Benzo(b)fluoranthene	0.0073	J	mg/kg	0.0095	0.00090	1
Benzo(a)pyrene	0.0062	J	mg/kg	0.0095	0.0011	1
Benzo(ghi)perylene	0.0054	J	mg/kg	0.0095	0.00081	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	56		30-120
4-Terphenyl-d14	37		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126411
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-06
Client ID: PB-668-02-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 09:20
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/01/21 14:55
Analyst: DV
Percent Solids: 52%

Extraction Method: EPA 3546
Extraction Date: 05/31/21 08:20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.25		mg/kg	0.012	0.0023	1
Fluorene	0.0022	J	mg/kg	0.012	0.0015	1
Phenanthrene	0.034		mg/kg	0.012	0.0011	1
Anthracene	0.0077	J	mg/kg	0.012	0.0010	1
Pyrene	0.059		mg/kg	0.012	0.00088	1
Benzo(a)anthracene	0.046		mg/kg	0.012	0.0012	1
Chrysene	0.039		mg/kg	0.012	0.00094	1
Benzo(b)fluoranthene	0.055		mg/kg	0.012	0.0012	1
Benzo(a)pyrene	0.040		mg/kg	0.012	0.0015	1
Benzo(ghi)perylene	0.026		mg/kg	0.012	0.0011	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	86		23-120
2-Fluorobiphenyl	61		30-120
4-Terphenyl-d14	40		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126411
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-07 D
Client ID: PB-668-03-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 09:40
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/01/21 22:21
Analyst: DV
Percent Solids: 67%

Extraction Method: EPA 3546
Extraction Date: 05/31/21 08:20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.14	J	mg/kg	0.20	0.035	20
Fluorene	0.58		mg/kg	0.20	0.024	20
Phenanthrene	0.86		mg/kg	0.20	0.017	20
Anthracene	0.35		mg/kg	0.20	0.016	20
Pyrene	0.65		mg/kg	0.20	0.014	20
Benzo(a)anthracene	0.18	J	mg/kg	0.20	0.019	20
Chrysene	0.27		mg/kg	0.20	0.015	20
Benzo(b)fluoranthene	0.14	J	mg/kg	0.20	0.019	20
Benzo(a)pyrene	0.13	J	mg/kg	0.20	0.024	20
Benzo(ghi)perylene	0.090	J	mg/kg	0.20	0.017	20

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	**0**	Q	23-120
2-Fluorobiphenyl	**0**	Q	30-120
4-Terphenyl-d14	**0**	Q	18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126411
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-08
Client ID: PB-668-04-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 10:02
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/01/21 15:12
Analyst: DV
Percent Solids: 89%

Extraction Method: EPA 3546
Extraction Date: 05/31/21 08:20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.012		mg/kg	0.0074	0.0013	1
Fluorene	0.0011	J	mg/kg	0.0074	0.00089	1
Phenanthrene	0.0096		mg/kg	0.0074	0.00063	1
Anthracene	0.0030	J	mg/kg	0.0074	0.00059	1
Pyrene	0.015		mg/kg	0.0074	0.00052	1
Benzo(a)anthracene	0.010		mg/kg	0.0074	0.00071	1
Chrysene	0.010		mg/kg	0.0074	0.00056	1
Benzo(b)fluoranthene	0.017		mg/kg	0.0074	0.00071	1
Benzo(a)pyrene	0.011		mg/kg	0.0074	0.00089	1
Benzo(ghi)perylene	0.013		mg/kg	0.0074	0.00063	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	71		23-120
2-Fluorobiphenyl	46		30-120
4-Terphenyl-d14	34		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126411

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-09 D
Client ID: PB-668-05-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 10:45
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/01/21 22:37
Analyst: DV
Percent Solids: 69%

Extraction Method: EPA 3546
Extraction Date: 05/31/21 08:20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.053		mg/kg	0.047	0.0085	5
Fluorene	ND		mg/kg	0.047	0.0056	5
Phenanthrene	0.0082	J	mg/kg	0.047	0.0040	5
Anthracene	ND		mg/kg	0.047	0.0038	5
Pyrene	0.0052	J	mg/kg	0.047	0.0033	5
Benzo(a)anthracene	0.0068	J	mg/kg	0.047	0.0045	5
Chrysene	0.0045	J	mg/kg	0.047	0.0035	5
Benzo(b)fluoranthene	0.0052	J	mg/kg	0.047	0.0045	5
Benzo(a)pyrene	ND		mg/kg	0.047	0.0056	5
Benzo(ghi)perylene	ND		mg/kg	0.047	0.0040	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	64		23-120
2-Fluorobiphenyl	47		30-120
4-Terphenyl-d14	33		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126411

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-10 D
Client ID: PB-663-01-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 11:00
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/02/21 17:04
Analyst: RP
Percent Solids: 70%

Extraction Method: EPA 3546
Extraction Date: 05/31/21 08:20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	1.2		mg/kg	0.19	0.034	20
Fluorene	1.3		mg/kg	0.19	0.023	20
Phenanthrene	13.		mg/kg	0.19	0.016	20
Anthracene	3.4		mg/kg	0.19	0.015	20
Pyrene	14.		mg/kg	0.19	0.013	20
Benzo(a)anthracene	9.0		mg/kg	0.19	0.018	20
Chrysene	7.0		mg/kg	0.19	0.014	20
Benzo(b)fluoranthene	10.		mg/kg	0.19	0.018	20
Benzo(a)pyrene	7.8		mg/kg	0.19	0.023	20
Benzo(ghi)perylene	4.8		mg/kg	0.19	0.016	20

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	**0**	Q	23-120
2-Fluorobiphenyl	**0**	Q	30-120
4-Terphenyl-d14	**0**	Q	18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126411
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-11 D
Client ID: PB-663-02-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 11:10
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/01/21 19:53
Analyst: DV
Percent Solids: 66%

Extraction Method: EPA 3546
Extraction Date: 05/31/21 08:20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.10		mg/kg	0.020	0.0036	2
Fluorene	0.0096	J	mg/kg	0.020	0.0024	2
Phenanthrene	0.35		mg/kg	0.020	0.0017	2
Anthracene	0.072		mg/kg	0.020	0.0016	2
Pyrene	0.81		mg/kg	0.020	0.0014	2
Benzo(a)anthracene	0.70		mg/kg	0.020	0.0019	2
Chrysene	0.62		mg/kg	0.020	0.0015	2
Benzo(b)fluoranthene	0.98		mg/kg	0.020	0.0019	2
Benzo(a)pyrene	0.67		mg/kg	0.020	0.0024	2
Benzo(ghi)perylene	0.47		mg/kg	0.020	0.0017	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	91		23-120
2-Fluorobiphenyl	60		30-120
4-Terphenyl-d14	36		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126411

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-12 D
Client ID: PB-663-03-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 12:15
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/02/21 17:20
Analyst: RP
Percent Solids: 70%

Extraction Method: EPA 3546
Extraction Date: 05/31/21 08:20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.92		mg/kg	0.48	0.086	50
Fluorene	3.3		mg/kg	0.48	0.057	50
Phenanthrene	30.		mg/kg	0.48	0.041	50
Anthracene	7.7		mg/kg	0.48	0.038	50
Pyrene	33.		mg/kg	0.48	0.034	50
Benzo(a)anthracene	22.		mg/kg	0.48	0.045	50
Chrysene	18.		mg/kg	0.48	0.036	50
Benzo(b)fluoranthene	23.		mg/kg	0.48	0.045	50
Benzo(a)pyrene	18.		mg/kg	0.48	0.057	50
Benzo(ghi)perylene	10.		mg/kg	0.48	0.041	50

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	**0**	Q	23-120
2-Fluorobiphenyl	**0**	Q	30-120
4-Terphenyl-d14	**0**	Q	18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126411
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-13
Client ID: PB-663-04-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 12:30
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/01/21 15:29
Analyst: DV
Percent Solids: 68%

Extraction Method: EPA 3546
Extraction Date: 05/31/21 08:22

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.23		mg/kg	0.0097	0.0017	1
Fluorene	0.050		mg/kg	0.0097	0.0012	1
Phenanthrene	0.062		mg/kg	0.0097	0.00082	1
Anthracene	0.059		mg/kg	0.0097	0.00077	1
Pyrene	0.034		mg/kg	0.0097	0.00068	1
Benzo(a)anthracene	0.045		mg/kg	0.0097	0.00092	1
Chrysene	0.043		mg/kg	0.0097	0.00072	1
Benzo(b)fluoranthene	0.13		mg/kg	0.0097	0.00092	1
Benzo(a)pyrene	0.10		mg/kg	0.0097	0.0012	1
Benzo(ghi)perylene	0.12		mg/kg	0.0097	0.00082	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	71		23-120
2-Fluorobiphenyl	49		30-120
4-Terphenyl-d14	36		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126411
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-14 D
Client ID: PB-663-05-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 12:50
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/01/21 19:36
Analyst: DV
Percent Solids: 65%

Extraction Method: EPA 3546
Extraction Date: 05/31/21 08:22

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.052		mg/kg	0.020	0.0036	2
Fluorene	0.014	J	mg/kg	0.020	0.0024	2
Phenanthrene	0.91		mg/kg	0.020	0.0017	2
Anthracene	0.13		mg/kg	0.020	0.0016	2
Pyrene	0.56		mg/kg	0.020	0.0014	2
Benzo(a)anthracene	0.42		mg/kg	0.020	0.0019	2
Chrysene	0.36		mg/kg	0.020	0.0015	2
Benzo(b)fluoranthene	0.79		mg/kg	0.020	0.0019	2
Benzo(a)pyrene	0.57		mg/kg	0.020	0.0024	2
Benzo(ghi)perylene	0.53		mg/kg	0.020	0.0017	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	62		30-120
4-Terphenyl-d14	54		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126411
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-15 D
Client ID: PB-663-06-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 13:15
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/01/21 22:04
Analyst: DV
Percent Solids: 81%

Extraction Method: EPA 3546
Extraction Date: 05/31/21 08:22

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.22		mg/kg	0.081	0.015	10
Fluorene	0.17		mg/kg	0.081	0.0097	10
Phenanthrene	3.0		mg/kg	0.081	0.0069	10
Anthracene	0.87		mg/kg	0.081	0.0065	10
Pyrene	6.4		mg/kg	0.081	0.0057	10
Benzo(a)anthracene	5.3		mg/kg	0.081	0.0077	10
Chrysene	4.3		mg/kg	0.081	0.0061	10
Benzo(b)fluoranthene	6.6		mg/kg	0.081	0.0077	10
Benzo(a)pyrene	4.8		mg/kg	0.081	0.0097	10
Benzo(ghi)perylene	3.0		mg/kg	0.081	0.0069	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	69		23-120
2-Fluorobiphenyl	50		30-120
4-Terphenyl-d14	39		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126411
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-16 D
Client ID: PB-663-07-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 13:25
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/01/21 20:09
Analyst: DV
Percent Solids: 94%

Extraction Method: EPA 3546
Extraction Date: 05/31/21 08:22

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.014	J	mg/kg	0.035	0.0064	5
Fluorene	0.0042	J	mg/kg	0.035	0.0042	5
Phenanthrene	0.49		mg/kg	0.035	0.0030	5
Anthracene	0.15		mg/kg	0.035	0.0028	5
Pyrene	0.37		mg/kg	0.035	0.0025	5
Benzo(a)anthracene	0.19		mg/kg	0.035	0.0034	5
Chrysene	0.19		mg/kg	0.035	0.0026	5
Benzo(b)fluoranthene	0.21		mg/kg	0.035	0.0034	5
Benzo(a)pyrene	0.12		mg/kg	0.035	0.0042	5
Benzo(ghi)perylene	0.17		mg/kg	0.035	0.0030	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	65		30-120
4-Terphenyl-d14	55		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126411
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-17 D
Client ID: PB-668-06-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 13:45
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/02/21 18:34
Analyst: RP
Percent Solids: 68%

Extraction Method: EPA 3546
Extraction Date: 05/31/21 08:22

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	150		mg/kg	3.9	0.70	400
Fluorene	25.		mg/kg	3.9	0.46	400
Phenanthrene	320		mg/kg	3.9	0.33	400
Anthracene	58.		mg/kg	3.9	0.31	400
Pyrene	190		mg/kg	3.9	0.27	400
Benzo(a)anthracene	120		mg/kg	3.9	0.37	400
Chrysene	90.		mg/kg	3.9	0.29	400
Benzo(b)fluoranthene	120		mg/kg	3.9	0.37	400
Benzo(a)pyrene	76.		mg/kg	3.9	0.46	400
Benzo(ghi)perylene	48.		mg/kg	3.9	0.33	400

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	**0**	Q	23-120
2-Fluorobiphenyl	**0**	Q	30-120
4-Terphenyl-d14	**0**	Q	18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126411
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-18 D
Client ID: PB-668-07-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 14:20
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/01/21 20:25
Analyst: DV
Percent Solids: 68%

Extraction Method: EPA 3546
Extraction Date: 05/31/21 08:22

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		mg/kg	0.048	0.0087	5
Fluorene	ND		mg/kg	0.048	0.0058	5
Phenanthrene	ND		mg/kg	0.048	0.0041	5
Anthracene	ND		mg/kg	0.048	0.0039	5
Pyrene	ND		mg/kg	0.048	0.0034	5
Benzo(a)anthracene	0.0051	J	mg/kg	0.048	0.0046	5
Chrysene	ND		mg/kg	0.048	0.0036	5
Benzo(b)fluoranthene	ND		mg/kg	0.048	0.0046	5
Benzo(a)pyrene	ND		mg/kg	0.048	0.0058	5
Benzo(ghi)perylene	ND		mg/kg	0.048	0.0041	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	71		23-120
2-Fluorobiphenyl	50		30-120
4-Terphenyl-d14	27		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126411
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-19
Client ID: FB-210519-1
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 14:30
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 05/26/21 14:26
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 05/24/21 18:59

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	78		15-120
4-Terphenyl-d14	80		41-149

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126411
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-20
Client ID: FB-210519-2
Sample Location: PHILADELPHIA, PA

Date Collected: 05/19/21 14:45
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 05/26/21 14:45
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 05/24/21 18:59

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	73		23-120
2-Fluorobiphenyl	75		15-120
4-Terphenyl-d14	76		41-149

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126411
Report Date: 06/08/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 05/26/21 11:50
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 05/24/21 15:59

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 19-20 Batch: WG1502995-1					
Naphthalene	ND		ug/l	0.10	0.05
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	ND		ug/l	0.05	0.02
Anthracene	ND		ug/l	0.10	0.01
Pyrene	ND		ug/l	0.10	0.02
Benzo(a)anthracene	ND		ug/l	0.05	0.02
Chrysene	ND		ug/l	0.10	0.01
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Benzo(ghi)perylene	ND		ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	54		21-120
Phenol-d6	52		10-120
Nitrobenzene-d5	88		23-120
2-Fluorobiphenyl	91		15-120
2,4,6-Tribromophenol	60		10-120
4-Terphenyl-d14	106		41-149

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126411
Report Date: 06/08/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 06/01/21 13:49
Analyst: DV

Extraction Method: EPA 3546
Extraction Date: 05/31/21 08:20

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01-18 Batch: WG1505670-1					
Naphthalene	ND		mg/kg	0.0066	0.0012
Fluorene	ND		mg/kg	0.0066	0.00079
Phenanthrene	ND		mg/kg	0.0066	0.00056
Anthracene	ND		mg/kg	0.0066	0.00053
Pyrene	ND		mg/kg	0.0066	0.00046
Benzo(a)anthracene	ND		mg/kg	0.0066	0.00063
Chrysene	ND		mg/kg	0.0066	0.00050
Benzo(b)fluoranthene	ND		mg/kg	0.0066	0.00063
Benzo(a)pyrene	ND		mg/kg	0.0066	0.00079
Benzo(ghi)perylene	ND		mg/kg	0.0066	0.00056

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	97		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	64		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126411

Report Date: 06/08/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 19-20 Batch: WG1502995-2 WG1502995-3								
Naphthalene	78		62		40-140	23		40
Fluorene	90		79		40-140	13		40
Phenanthrene	93		86		40-140	8		40
Anthracene	95		88		40-140	8		40
Pyrene	97		95		26-127	2		40
Benzo(a)anthracene	95		94		40-140	1		40
Chrysene	95		94		40-140	1		40
Benzo(b)fluoranthene	102		100		40-140	2		40
Benzo(a)pyrene	100		99		40-140	1		40
Benzo(ghi)perylene	95		92		40-140	3		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	62		44		21-120
Phenol-d6	54		40		10-120
Nitrobenzene-d5	81		62		23-120
2-Fluorobiphenyl	77		64		15-120
2,4,6-Tribromophenol	74		67		10-120
4-Terphenyl-d14	96		93		41-149

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126411

Report Date: 06/08/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01-18 Batch: WG1505670-2 WG1505670-3								
Naphthalene	62		85		40-140	31		50
Fluorene	64		87		40-140	30		50
Phenanthrene	62		86		40-140	32		50
Anthracene	66		91		40-140	32		50
Pyrene	64		87		35-142	30		50
Benzo(a)anthracene	68		92		40-140	30		50
Chrysene	62		84		40-140	30		50
Benzo(b)fluoranthene	70		101		40-140	36		50
Benzo(a)pyrene	71		98		40-140	32		50
Benzo(ghi)perylene	68		92		40-140	30		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	78		106		23-120
2-Fluorobiphenyl	61		82		30-120
4-Terphenyl-d14	58		78		18-120

METALS

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126411
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-01
Client ID: PB-666-23-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/19/21 07:45
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 67%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	66.3		mg/kg	2.88	0.154	1	05/28/21 10:06	05/31/21 14:55	EPA 3050B	1,6010D	EW

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126411
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-02
Client ID: PB-666-24-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/19/21 08:10
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	385		mg/kg	2.30	0.123	1	05/28/21 10:06	05/31/21 14:04	EPA 3050B	1,6010D	EW

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126411
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-03
Client ID: PB-666-25-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/19/21 08:30
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	205		mg/kg	2.31	0.124	1	05/28/21 10:06	05/31/21 14:08	EPA 3050B	1,6010D	EW

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126411
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-04
Client ID: PB-666-06-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/19/21 08:45
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 56%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2200		mg/kg	3.49	0.187	1	05/28/21 10:06	05/31/21 14:13	EPA 3050B	1,6010D	EW

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126411
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-05
Client ID: PB-668-01-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/19/21 09:05
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 69%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	26.9		mg/kg	2.84	0.152	1	05/28/21 10:06	05/31/21 14:18	EPA 3050B	1,6010D	EW

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126411
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-06
Client ID: PB-668-02-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/19/21 09:20
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 52%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1600		mg/kg	3.75	0.201	1	05/28/21 10:06	05/31/21 14:41	EPA 3050B	1,6010D	EW

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126411
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-07
Client ID: PB-668-03-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/19/21 09:40
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 67%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	483		mg/kg	2.80	0.150	1	05/28/21 10:06	05/31/21 14:46	EPA 3050B	1,6010D	EW

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126411
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-08
Client ID: PB-668-04-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/19/21 10:02
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	192		mg/kg	2.22	0.119	1	05/28/21 10:06	05/31/21 14:50	EPA 3050B	1,6010D	EW

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126411
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-09
Client ID: PB-668-05-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/19/21 10:45
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 69%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	156		mg/kg	2.86	0.153	1	05/28/21 10:06	05/31/21 15:28	EPA 3050B	1,6010D	EW

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126411
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-10
Client ID: PB-663-01-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/19/21 11:00
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 70%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1470		mg/kg	2.84	0.152	1	05/28/21 10:06	05/31/21 15:33	EPA 3050B	1,6010D	EW

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126411
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-11
Client ID: PB-663-02-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/19/21 11:10
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 66%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	7180		mg/kg	15.1	0.808	5	05/28/21 10:06	05/31/21 17:51	EPA 3050B	1,6010D	BV

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126411
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-12
Client ID: PB-663-03-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/19/21 12:15
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 70%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3380		mg/kg	2.79	0.150	1	05/28/21 10:06	05/31/21 15:43	EPA 3050B	1,6010D	EW

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126411
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-13
Client ID: PB-663-04-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/19/21 12:30
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 68%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	461		mg/kg	2.78	0.149	1	05/28/21 10:06	05/31/21 15:47	EPA 3050B	1,6010D	EW

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126411
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-14
Client ID: PB-663-05-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/19/21 12:50
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 65%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	23.1		mg/kg	3.04	0.163	1	05/28/21 10:06	05/31/21 15:52	EPA 3050B	1,6010D	EW

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126411
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-15
Client ID: PB-663-06-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/19/21 13:15
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	27.7		mg/kg	2.45	0.131	1	05/28/21 10:06	05/31/21 15:57	EPA 3050B	1,6010D	EW

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126411
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-16
Client ID: PB-663-07-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/19/21 13:25
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1420		mg/kg	2.05	0.110	1	05/28/21 10:06	05/31/21 16:02	EPA 3050B	1,6010D	EW

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126411
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-17
Client ID: PB-668-06-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/19/21 13:45
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 68%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	195		mg/kg	2.87	0.154	1	05/28/21 10:06	05/31/21 16:06	EPA 3050B	1,6010D	EW

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126411
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-18
Client ID: PB-668-07-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/19/21 14:20
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 68%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	87.0		mg/kg	2.85	0.153	1	05/28/21 10:06	05/31/21 16:11	EPA 3050B	1,6010D	EW

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126411
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-19
Client ID: FB-210519-1
Sample Location: PHILADELPHIA, PA
Date Collected: 05/19/21 14:30
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab											
Lead, Dissolved	ND		ug/l	1.000	0.3430	1	05/26/21 10:44	06/07/21 14:49	EPA 3005A	1,6020B	CD

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126411
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-20
Client ID: FB-210519-2
Sample Location: PHILADELPHIA, PA
Date Collected: 05/19/21 14:45
Date Received: 05/19/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab											
Lead, Dissolved	ND		ug/l	1.000	0.3430	1	05/26/21 10:44	06/07/21 14:54	EPA 3005A	1,6020B	CD

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126411

Project Number: 200.00135.005 **Report Date:** 06/08/21

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab for sample(s): 19-20 Batch: WG1503348-1										
Lead, Dissolved	ND		ug/l	1.000	0.3430	1	05/26/21 10:44	06/07/21 13:42	1,6020B	CD

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-18 Batch: WG1504100-1										
Lead, Total	ND		mg/kg	2.00	0.107	1	05/28/21 10:06	05/31/21 14:32	1,6010D	EW

Prep Information

Digestion Method: EPA 3050B

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126411

Report Date: 06/08/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 19-20 Batch: WG1503348-2								
Lead, Dissolved	106		-		80-120	-		
Total Metals - Mansfield Lab Associated sample(s): 01-18 Batch: WG1504100-2 SRM Lot Number: D109-540								
Lead, Total	89		-		72-128	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005

Lab Number: L2126411
Report Date: 06/08/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 19-20 QC Batch ID: WG1503348-3 QC Sample: L2126437-01 Client ID: MS Sample												
Lead, Dissolved	ND	510	538.6	106		-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 01-18 QC Batch ID: WG1504100-3 QC Sample: L2126411-01 Client ID: PB-666-23-SS01												
Lead, Total	66.3	59.2	76.0	**16**	Q	-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126411

Report Date: 06/08/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 19-20 QC Batch ID: WG1503348-4 QC Sample: L2126437-01 Client ID: DUP Sample						
Lead, Dissolved	ND	ND	ug/l	NC		20
Total Metals - Mansfield Lab Associated sample(s): 01-18 QC Batch ID: WG1504100-4 QC Sample: L2126411-01 Client ID: PB-666-23-SS01						
Lead, Total	66.3	55.1	mg/kg	18		20

INORGANICS
&
MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126411
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-01
Client ID: PB-666-23-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 05/19/21 07:45
Date Received: 05/19/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	66.9		%	0.100	NA	1	-	05/21/21 09:26	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126411
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-02
Client ID: PB-666-24-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/19/21 08:10
Date Received: 05/19/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.7		%	0.100	NA	1	-	05/21/21 09:26	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126411
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-03
Client ID: PB-666-25-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/19/21 08:30
Date Received: 05/19/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.1		%	0.100	NA	1	-	05/21/21 09:26	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126411
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-04
Client ID: PB-666-06-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 05/19/21 08:45
Date Received: 05/19/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	56.2		%	0.100	NA	1	-	05/21/21 09:26	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126411
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-05
Client ID: PB-668-01-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/19/21 09:05
Date Received: 05/19/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	69.4		%	0.100	NA	1	-	05/21/21 09:26	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126411
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-06
Client ID: PB-668-02-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/19/21 09:20
Date Received: 05/19/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	52.4		%	0.100	NA	1	-	05/21/21 09:26	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126411
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-07
Client ID: PB-668-03-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 05/19/21 09:40
Date Received: 05/19/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	67.4		%	0.100	NA	1	-	05/21/21 09:26	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126411
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-08
Client ID: PB-668-04-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/19/21 10:02
Date Received: 05/19/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.1		%	0.100	NA	1	-	05/21/21 09:26	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126411
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-09
Client ID: PB-668-05-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 05/19/21 10:45
Date Received: 05/19/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	69.1		%	0.100	NA	1	-	05/21/21 09:26	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126411
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-10
Client ID: PB-663-01-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/19/21 11:00
Date Received: 05/19/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	70.3		%	0.100	NA	1	-	05/21/21 09:26	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126411
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-11
Client ID: PB-663-02-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/19/21 11:10
Date Received: 05/19/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	66.3		%	0.100	NA	1	-	05/21/21 09:26	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126411
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-12
Client ID: PB-663-03-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 05/19/21 12:15
Date Received: 05/19/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	69.5		%	0.100	NA	1	-	05/21/21 09:26	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126411
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-13
Client ID: PB-663-04-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/19/21 12:30
Date Received: 05/19/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	67.6		%	0.100	NA	1	-	05/21/21 09:26	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126411
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-14
Client ID: PB-663-05-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/19/21 12:50
Date Received: 05/19/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	64.8		%	0.100	NA	1	-	05/21/21 09:26	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126411
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-15
Client ID: PB-663-06-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/19/21 13:15
Date Received: 05/19/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.1		%	0.100	NA	1	-	05/21/21 09:26	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126411
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-16
Client ID: PB-663-07-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/19/21 13:25
Date Received: 05/19/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	93.5		%	0.100	NA	1	-	05/21/21 09:26	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126411
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-17
Client ID: PB-668-06-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 05/19/21 13:45
Date Received: 05/19/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	67.9		%	0.100	NA	1	-	05/21/21 09:26	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126411
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126411-18
Client ID: PB-668-07-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/19/21 14:20
Date Received: 05/19/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	68.0		%	0.100	NA	1	-	05/21/21 09:26	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005

Lab Number: L2126411
Report Date: 06/08/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2126411-01A	Vial MeOH preserved	A	NA		2.9	Y	Absent		PA-8260HLW(14)
L2126411-01B	Vial water preserved	A	NA		2.9	Y	Absent	21-MAY-21 02:50	PA-8260HLW(14)
L2126411-01C	Vial water preserved	A	NA		2.9	Y	Absent	21-MAY-21 02:50	PA-8260HLW(14)
L2126411-01D	Plastic 120ml unpreserved	A	NA		2.9	Y	Absent		TS(7)
L2126411-01E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.9	Y	Absent		PB-TI(180)
L2126411-01F	Glass 120ml/4oz unpreserved	A	NA		2.9	Y	Absent		PA-8270SIM(14)
L2126411-02A	Vial MeOH preserved	A	NA		2.9	Y	Absent		PA-8260HLW(14)
L2126411-02B	Vial water preserved	A	NA		2.9	Y	Absent	21-MAY-21 02:50	PA-8260HLW(14)
L2126411-02C	Vial water preserved	A	NA		2.9	Y	Absent	21-MAY-21 02:50	PA-8260HLW(14)
L2126411-02D	Plastic 120ml unpreserved	A	NA		2.9	Y	Absent		TS(7)
L2126411-02E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.9	Y	Absent		PB-TI(180)
L2126411-02F	Glass 120ml/4oz unpreserved	A	NA		2.9	Y	Absent		PA-8270SIM(14)
L2126411-03A	Vial MeOH preserved	A	NA		2.9	Y	Absent		PA-8260HLW(14)
L2126411-03B	Vial water preserved	A	NA		2.9	Y	Absent	21-MAY-21 02:50	PA-8260HLW(14)
L2126411-03C	Vial water preserved	A	NA		2.9	Y	Absent	21-MAY-21 02:50	PA-8260HLW(14)
L2126411-03D	Plastic 120ml unpreserved	A	NA		2.9	Y	Absent		TS(7)
L2126411-03E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.9	Y	Absent		PB-TI(180)
L2126411-03F	Glass 120ml/4oz unpreserved	A	NA		2.9	Y	Absent		PA-8270SIM(14)
L2126411-04A	Vial MeOH preserved	A	NA		2.9	Y	Absent		PA-8260HLW(14)
L2126411-04B	Vial water preserved	A	NA		2.9	Y	Absent	21-MAY-21 02:50	PA-8260HLW(14)
L2126411-04C	Vial water preserved	A	NA		2.9	Y	Absent	21-MAY-21 02:50	PA-8260HLW(14)
L2126411-04D	Plastic 120ml unpreserved	A	NA		2.9	Y	Absent		TS(7)

*Values in parentheses indicate holding time in days

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005

Lab Number: L2126411
Report Date: 06/08/21

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2126411-04E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.9	Y	Absent		PB-TI(180)
L2126411-04F	Glass 120ml/4oz unpreserved	A	NA		2.9	Y	Absent		PA-8270SIM(14)
L2126411-05A	Vial MeOH preserved	A	NA		2.9	Y	Absent		PA-8260HLW(14)
L2126411-05B	Vial water preserved	A	NA		2.9	Y	Absent	21-MAY-21 02:50	PA-8260HLW(14)
L2126411-05C	Vial water preserved	A	NA		2.9	Y	Absent	21-MAY-21 02:50	PA-8260HLW(14)
L2126411-05D	Plastic 120ml unpreserved	A	NA		2.9	Y	Absent		TS(7)
L2126411-05E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.9	Y	Absent		PB-TI(180)
L2126411-05F	Glass 120ml/4oz unpreserved	A	NA		2.9	Y	Absent		PA-8270SIM(14)
L2126411-06A	Vial MeOH preserved	A	NA		2.9	Y	Absent		PA-8260HLW(14)
L2126411-06B	Vial water preserved	A	NA		2.9	Y	Absent	21-MAY-21 02:50	PA-8260HLW(14)
L2126411-06C	Vial water preserved	A	NA		2.9	Y	Absent	21-MAY-21 02:50	PA-8260HLW(14)
L2126411-06D	Plastic 120ml unpreserved	A	NA		2.9	Y	Absent		TS(7)
L2126411-06E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.9	Y	Absent		PB-TI(180)
L2126411-06F	Glass 120ml/4oz unpreserved	A	NA		2.9	Y	Absent		PA-8270SIM(14)
L2126411-07A	Vial MeOH preserved	A	NA		2.9	Y	Absent		PA-8260HLW(14)
L2126411-07B	Vial water preserved	A	NA		2.9	Y	Absent	21-MAY-21 02:50	PA-8260HLW(14)
L2126411-07C	Vial water preserved	A	NA		2.9	Y	Absent	21-MAY-21 02:50	PA-8260HLW(14)
L2126411-07D	Plastic 120ml unpreserved	A	NA		2.9	Y	Absent		TS(7)
L2126411-07E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.9	Y	Absent		PB-TI(180)
L2126411-07F	Glass 120ml/4oz unpreserved	A	NA		2.9	Y	Absent		PA-8270SIM(14)
L2126411-08A	Vial MeOH preserved	A	NA		2.9	Y	Absent		PA-8260HLW(14)
L2126411-08B	Vial water preserved	A	NA		2.9	Y	Absent	21-MAY-21 02:50	PA-8260HLW(14)
L2126411-08C	Vial water preserved	A	NA		2.9	Y	Absent	21-MAY-21 02:50	PA-8260HLW(14)
L2126411-08D	Plastic 120ml unpreserved	A	NA		2.9	Y	Absent		TS(7)
L2126411-08E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.9	Y	Absent		PB-TI(180)
L2126411-08F	Glass 120ml/4oz unpreserved	A	NA		2.9	Y	Absent		PA-8270SIM(14)
L2126411-09A	Vial MeOH preserved	A	NA		2.9	Y	Absent		PA-8260HLW(14)
L2126411-09B	Vial water preserved	A	NA		2.9	Y	Absent	21-MAY-21 02:50	PA-8260HLW(14)

*Values in parentheses indicate holding time in days

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005

Lab Number: L2126411
Report Date: 06/08/21

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2126411-09C	Vial water preserved	A	NA		2.9	Y	Absent	21-MAY-21 02:50	PA-8260HLW(14)
L2126411-09D	Plastic 120ml unpreserved	A	NA		2.9	Y	Absent		TS(7)
L2126411-09E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.9	Y	Absent		PB-TI(180)
L2126411-09F	Glass 120ml/4oz unpreserved	A	NA		2.9	Y	Absent		PA-8270SIM(14)
L2126411-10A	Vial MeOH preserved	B	NA		2.6	Y	Absent		PA-8260HLW(14)
L2126411-10B	Vial water preserved	B	NA		2.6	Y	Absent	21-MAY-21 02:50	PA-8260HLW(14)
L2126411-10C	Vial water preserved	B	NA		2.6	Y	Absent	21-MAY-21 02:50	PA-8260HLW(14)
L2126411-10D	Plastic 120ml unpreserved	B	NA		2.6	Y	Absent		TS(7)
L2126411-10E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.6	Y	Absent		PB-TI(180)
L2126411-10F	Glass 120ml/4oz unpreserved	B	NA		2.6	Y	Absent		PA-8270SIM(14)
L2126411-11A	Vial MeOH preserved	B	NA		2.6	Y	Absent		PA-8260HLW(14)
L2126411-11B	Vial water preserved	B	NA		2.6	Y	Absent	21-MAY-21 02:50	PA-8260HLW(14)
L2126411-11C	Vial water preserved	B	NA		2.6	Y	Absent	21-MAY-21 02:50	PA-8260HLW(14)
L2126411-11D	Plastic 120ml unpreserved	B	NA		2.6	Y	Absent		TS(7)
L2126411-11E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.6	Y	Absent		PB-TI(180)
L2126411-11F	Glass 120ml/4oz unpreserved	B	NA		2.6	Y	Absent		PA-8270SIM(14)
L2126411-12A	Vial MeOH preserved	B	NA		2.6	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2126411-12B	Vial water preserved	B	NA		2.6	Y	Absent	21-MAY-21 02:50	PA-8260H(14),PA-8260HLW(14)
L2126411-12C	Vial water preserved	B	NA		2.6	Y	Absent	21-MAY-21 02:50	PA-8260H(14),PA-8260HLW(14)
L2126411-12D	Plastic 120ml unpreserved	B	NA		2.6	Y	Absent		TS(7)
L2126411-12E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.6	Y	Absent		PB-TI(180)
L2126411-12F	Glass 120ml/4oz unpreserved	B	NA		2.6	Y	Absent		PA-8270SIM(14)
L2126411-13A	Vial MeOH preserved	B	NA		2.6	Y	Absent		PA-8260HLW(14)
L2126411-13B	Vial water preserved	B	NA		2.6	Y	Absent	21-MAY-21 02:50	PA-8260HLW(14)
L2126411-13C	Vial water preserved	B	NA		2.6	Y	Absent	21-MAY-21 02:50	PA-8260HLW(14)
L2126411-13D	Plastic 120ml unpreserved	B	NA		2.6	Y	Absent		TS(7)
L2126411-13E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.6	Y	Absent		PB-TI(180)
L2126411-13F	Glass 120ml/4oz unpreserved	B	NA		2.6	Y	Absent		PA-8270SIM(14)

*Values in parentheses indicate holding time in days

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005

Lab Number: L2126411
Report Date: 06/08/21

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2126411-14A	Vial MeOH preserved	B	NA		2.6	Y	Absent		PA-8260HLW(14)
L2126411-14B	Vial water preserved	B	NA		2.6	Y	Absent	21-MAY-21 02:50	PA-8260HLW(14)
L2126411-14C	Vial water preserved	B	NA		2.6	Y	Absent	21-MAY-21 02:50	PA-8260HLW(14)
L2126411-14D	Plastic 120ml unpreserved	B	NA		2.6	Y	Absent		TS(7)
L2126411-14E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.6	Y	Absent		PB-TI(180)
L2126411-14F	Glass 120ml/4oz unpreserved	B	NA		2.6	Y	Absent		PA-8270SIM(14)
L2126411-15A	Vial MeOH preserved	B	NA		2.6	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2126411-15B	Vial water preserved	B	NA		2.6	Y	Absent	21-MAY-21 02:50	PA-8260H(14),PA-8260HLW(14)
L2126411-15C	Vial water preserved	B	NA		2.6	Y	Absent	21-MAY-21 02:50	PA-8260H(14),PA-8260HLW(14)
L2126411-15D	Plastic 120ml unpreserved	B	NA		2.6	Y	Absent		TS(7)
L2126411-15E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.6	Y	Absent		PB-TI(180)
L2126411-15F	Glass 120ml/4oz unpreserved	B	NA		2.6	Y	Absent		PA-8270SIM(14)
L2126411-16A	Vial MeOH preserved	B	NA		2.6	Y	Absent		PA-8260HLW(14)
L2126411-16B	Vial water preserved	B	NA		2.6	Y	Absent	21-MAY-21 02:50	PA-8260HLW(14)
L2126411-16C	Vial water preserved	B	NA		2.6	Y	Absent	21-MAY-21 02:50	PA-8260HLW(14)
L2126411-16D	Plastic 120ml unpreserved	B	NA		2.6	Y	Absent		TS(7)
L2126411-16E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.6	Y	Absent		PB-TI(180)
L2126411-16F	Glass 120ml/4oz unpreserved	B	NA		2.6	Y	Absent		PA-8270SIM(14)
L2126411-17A	Vial MeOH preserved	B	NA		2.6	Y	Absent		PA-8260HLW(14)
L2126411-17B	Vial water preserved	B	NA		2.6	Y	Absent	21-MAY-21 02:50	PA-8260HLW(14)
L2126411-17C	Vial water preserved	B	NA		2.6	Y	Absent	21-MAY-21 02:50	PA-8260HLW(14)
L2126411-17D	Plastic 120ml unpreserved	B	NA		2.6	Y	Absent		TS(7)
L2126411-17E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.6	Y	Absent		PB-TI(180)
L2126411-17F	Glass 120ml/4oz unpreserved	B	NA		2.6	Y	Absent		PA-8270SIM(14)
L2126411-18A	Vial MeOH preserved	B	NA		2.6	Y	Absent		PA-8260HLW(14)
L2126411-18B	Vial water preserved	B	NA		2.6	Y	Absent	21-MAY-21 02:50	PA-8260HLW(14)
L2126411-18C	Vial water preserved	B	NA		2.6	Y	Absent	21-MAY-21 02:50	PA-8260HLW(14)
L2126411-18D	Plastic 120ml unpreserved	B	NA		2.6	Y	Absent		TS(7)

*Values in parentheses indicate holding time in days

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005

Lab Number: L2126411
Report Date: 06/08/21

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2126411-18E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.6	Y	Absent		PB-TI(180)
L2126411-18F	Glass 120ml/4oz unpreserved	B	NA		2.6	Y	Absent		PA-8270SIM(14)
L2126411-19A	Vial HCl preserved	B	NA		2.6	Y	Absent		PA-8260(14)
L2126411-19B	Vial HCl preserved	B	NA		2.6	Y	Absent		PA-8260(14)
L2126411-19C	Vial HCl preserved	B	NA		2.6	Y	Absent		PA-8260(14)
L2126411-19D	Vial Na2S2O3 preserved	B	NA		2.6	Y	Absent		8011(14)
L2126411-19E	Vial Na2S2O3 preserved	B	NA		2.6	Y	Absent		8011(14)
L2126411-19F	Plastic 250ml unpreserved	B	7	7	2.6	Y	Absent		-
L2126411-19G	Amber 250ml unpreserved	B	7	7	2.6	Y	Absent		PA-8270SIM-LVI(7)
L2126411-19H	Amber 250ml unpreserved	B	7	7	2.6	Y	Absent		PA-8270SIM-LVI(7)
L2126411-19W	Plastic 120ml HNO3 preserved Filtrates	B	NA		2.6	Y	Absent		PB-6020S-PPB(180)
L2126411-20A	Vial HCl preserved	A	NA		2.9	Y	Absent		PA-8260(14)
L2126411-20B	Vial HCl preserved	A	NA		2.9	Y	Absent		PA-8260(14)
L2126411-20C	Vial HCl preserved	A	NA		2.9	Y	Absent		PA-8260(14)
L2126411-20D	Vial Na2S2O3 preserved	A	NA		2.9	Y	Absent		8011(14)
L2126411-20E	Vial Na2S2O3 preserved	A	NA		2.9	Y	Absent		8011(14)
L2126411-20F	Plastic 250ml unpreserved	A	7	7	2.9	Y	Absent		-
L2126411-20G	Amber 250ml unpreserved	A	7	7	2.9	Y	Absent		PA-8270SIM-LVI(7)
L2126411-20H	Amber 250ml unpreserved	A	7	7	2.9	Y	Absent		PA-8270SIM-LVI(7)
L2126411-20W	Plastic 120ml HNO3 preserved Filtrates	A	NA		2.9	Y	Absent		PB-6020S-PPB(180)
L2126411-21A	Vial HCl preserved	B	NA		2.6	Y	Absent		PA-8260(14)
L2126411-21B	Vial HCl preserved	B	NA		2.6	Y	Absent		PA-8260(14)
L2126411-21C	Vial Na2S2O3 preserved	B	NA		2.6	Y	Absent		8011(14)
L2126411-21D	Vial Na2S2O3 preserved	B	NA		2.6	Y	Absent		8011(14)

*Values in parentheses indicate holding time in days

Project Name:	PHILADELPHIA REFINERY-AST CLOS	**Lab Number:**	L2126411
Project Number:	200.00135.005	**Report Date:**	06/08/21

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY-AST CLOS	**Lab Number:**	L2126411
Project Number:	200.00135.005	**Report Date:**	06/08/21

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. (Note: 'PFAS, Total (6)' is applicable to MassDEP DW compliance analysis only.). If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY-AST CLOS	**Lab Number:**	L2126411
Project Number:	200.00135.005	**Report Date:**	06/08/21

Data Qualifiers

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

Project Name:	PHILADELPHIA REFINERY-AST CLOS	**Lab Number:**	L2126411
Project Number:	200.00135.005	**Report Date:**	06/08/21

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

NEW JERSEY CHAIN OF CUSTODY

ALPHA

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 3 of

Date Rec'd in Lab: 5/20/21

ALPHA Job #: L2126411

Client Information

Client: Ransom Consulting
Address: 2127 Hamilton Ave
Phone: 215-901-4974
Fax:
Email: William.Schmidt@Ransom...

Project Information

Project Name: Philadelphia Refinery - AST Closure
Project Location: Philadelphia, PA
Project #: 201.00135.005
(Use Project name as Project #) ☐
Project Manager: William Schmidt
ALPHAQuote #:

Turn-Around Time

Standard ☐ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables

☐ NJ Full / Reduced
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☒ Other Email, ADEX

Regulatory Requirement

☐ SRS Residential/Non Residential
☐ SRS Impact to Groundwater
☐ NJ Ground Water Quality Standards
☐ NJ IGW SPLP Leachate Criteria
☐ Other

Billing Information

☑ Same as Client Info
PO #

Site Information

Is this site impacted by Petroleum? Yes ☑
Petroleum Product:

These samples have been previously analyzed by Alpha ☐

For EPH, selection is REQUIRED:
☐ Category 1
☐ Category 2

For VOC, selection is REQUIRED:
☐ 1,4-Dioxane
☐ 8011

Other project specific requirements/comments:
Report only Project Specific Analyte List
Please specify Metals or TAL.
PADEP Leaded/Unleaded Gasoline, No 1-6 Fuel Oil Short List. Lead only.

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	PA-8270 SIM	METALS (LEAD)	TS	PA-8260 HW					Sample Specific Comments	Total Bottles
26411 -01	PB-666-23-SS01	5/19	0745	S	JS	✓	✓	✓	✓						6
-02	PB-666-24-SS01	↓	0810	↓	↓	✓	✓	✓	✓						6
-03	PB-666-25-SS01	↓	0830	↓	↓	✓	✓	✓	✓						6
-04	PB-666-06-SS01	↓	0845	↓	↓	✓	✓	✓	✓						6
-05	PB-668-01-SS01	↓	0905	↓	↓	✓	✓	✓	✓						6
-06	PB-668-02-SS01	↓	0920	↓	↓	✓	✓	✓	✓						6
-07	PB-668-03-SS01	↓	0940	↓	↓	✓	✓	✓	✓						6
-08	PB-668-04-SS01	↓	1007	↓	↓	✓	✓	✓	✓						6
-09	PB-668-05-SS01	↓	1045	↓	↓	✓	✓	✓	✓						6
-10	~~PB-668-0~~ PB-663-01-SS01	↓	1100	↓	↓	✓	✓	✓	✓						6
					Container Type	A	A	P	V						
					Preservative	A	A	A	F						

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	5/19/21 1730	[signature]	5/19/21 15:12
[signature]	5-19-21 2000	[signature]	5-19-21 1730
[signature]	5/19/21	[signature]	5/20/21 02:30

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-14 HC (rev. 30-Sept-2013)

NEW JERSEY CHAIN OF CUSTODY

ALPHA ANALYTICAL

Westborough, MA 01581 — 8 Walkup Dr. — TEL: 508-898-9220 — FAX: 508-898-9193

Mansfield, MA 02048 — 320 Forbes Blvd — TEL: 508-822-9300 — FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 3 of

Date Rec'd in Lab: 5/20/21

ALPHA Job #: L2126411

Client Information

Client: Ransom Consulting
Address: 2177 Hamilton Ave
Phone: 215-901-4974
Fax:
Email: William.Schmidt@Ransom

Project Information

Project Name: Philadelphia Refinery- AST Closure
Project Location: Philadelphia, PA
Project #: 200.00135.005
(Use Project name as Project #)
Project Manager: William Schmidt
ALPHAQuote #:

Turn-Around Time

Standard ☐ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables

☐ NJ Full / Reduced
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☒ Other EMAIL ADEX

Regulatory Requirement

☐ SRS Residential/Non Residential
☐ SRS Impact to Groundwater
☐ NJ Ground Water Quality Standards
☐ NJ IGW SPLP Leachate Criteria
☐ Other

Billing Information

☑ Same as Client Info
PO #

Site Information

Is this site impacted by Petroleum? Yes ☑
Petroleum Product:

These samples have been previously analyzed by Alpha ☐

For EPH, selection is REQUIRED:
☐ Category 1
☐ Category 2

For VOC, selection is REQUIRED:
☐ 1,4-Dioxane
☐ 8011

Other project specific requirements/comments:
Report only Project Specific Analyte List

Please specify Metals or TAL.
PADEP Leaded/Unleaded Gasoline, No 1-6 Fuel Oil Short List, Lead only

ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	PA-8270 SIM	Metals (Lead)	TS	PA-8260 HLW	PA-8270 SIM-LVI	Dissolved Metals	PA-8260	8011	Sample Specific Comments	Total Bottle
26411-11	PB-663-02-5501	5/19	1110	S	TS	✓	✓	✓	✓						6
-12	PB-663-03-5501		1215	S		✓	✓	✓	✓						6
-13	PB-663-04-5501		1230	S		✓	✓	✓	✓						6
-14	PB-663-05-5501		1250	S		✓	✓	✓	✓						6
-15	PB-663-06-5501		1315	S		✓	✓	✓	✓						6
-16	PB-663-07-5501		0325	S		✓	✓	✓	✓						6
-17	PB-668-06-5501		1345	S		✓	✓	✓	✓						6
-18	PB-668-07-5501		1420	S		✓	✓	✓	✓						6
-19	FB-210519-1		1430	A						✓	✓	✓	✓		8
-20	FB-210519-2	↓	1445	A	↓					✓	✓	✓	✓		8

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

Container Type	A	A	P	V
Preservative	A	A	A	F

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Relinquished By:	Date/Time	Received By:	Date/Time
	5/19/21 1230		5/19/21 15:12
	5-19-21 2100		5/19/21 2330
			5/20/21 02:30

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-14 HC (rev. 30-Sept-2013)

ALPHA ANALYTICAL

NEW JERSEY CHAIN OF CUSTODY

Westborough, MA 01581 — 8 Walkup Dr. — TEL: 508-898-9220 — FAX: 508-898-9193
Mansfield, MA 02048 — 320 Forbes Blvd — TEL: 508-822-9300 — FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 3 of

Date Rec'd in Lab: 5/20/21

ALPHA Job #: L2126411

Client Information
Client: Ransom Consulting
Address: 2127 Hamilton Ave
Phone: 215-901-4974
Fax:
Email: William.Schmidt@ransom.com

Project Information
Project Name: Philadelphia Refinery
Project Location: Philadelphia, PA
Project #: 200.0C135.005
(Use Project name as Project #)
Project Manager: William Schmidt
ALPHAQuote #:

Turn-Around Time
Standard
Rush (only if pre approved)
Due Date:
# of Days:

Deliverables
- NJ Full / Reduced
- EQuIS (1 File)
- EQuIS (4 File)
- Other

Billing Information
- Same as Client Info

PO #

Regulatory Requirement
- SRS Residential/Non Residential
- SRS Impact to Groundwater
- NJ Ground Water Quality Standards
- NJ IGW SPLP Leachate Criteria
- Other

Site Information
Is this site impacted by Petroleum? Yes

Petroleum Product:

These samples have been previously analyzed by Alpha

For EPH, selection is REQUIRED:
- Category 1
- Category 2

For VOC, selection is REQUIRED:
- 1,4-Dioxane
- 8011

Other project specific requirements/comments:
See Page 1

Please specify Metals or TAL.

ANALYSIS

Sample Filtration
- Done
- Lab to do

Preservation
- Lab to do

(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	Sample Specific Comments	Total Bottle
2411 -21	TB-210519	5/19		A	TS		5

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Container Type
Preservative

Relinquished By:	Date/Time	Received By:	Date/Time
	5/14/21 1730		5/19/21 15:12
	5/19/21 2100		5/20/21 02:30

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

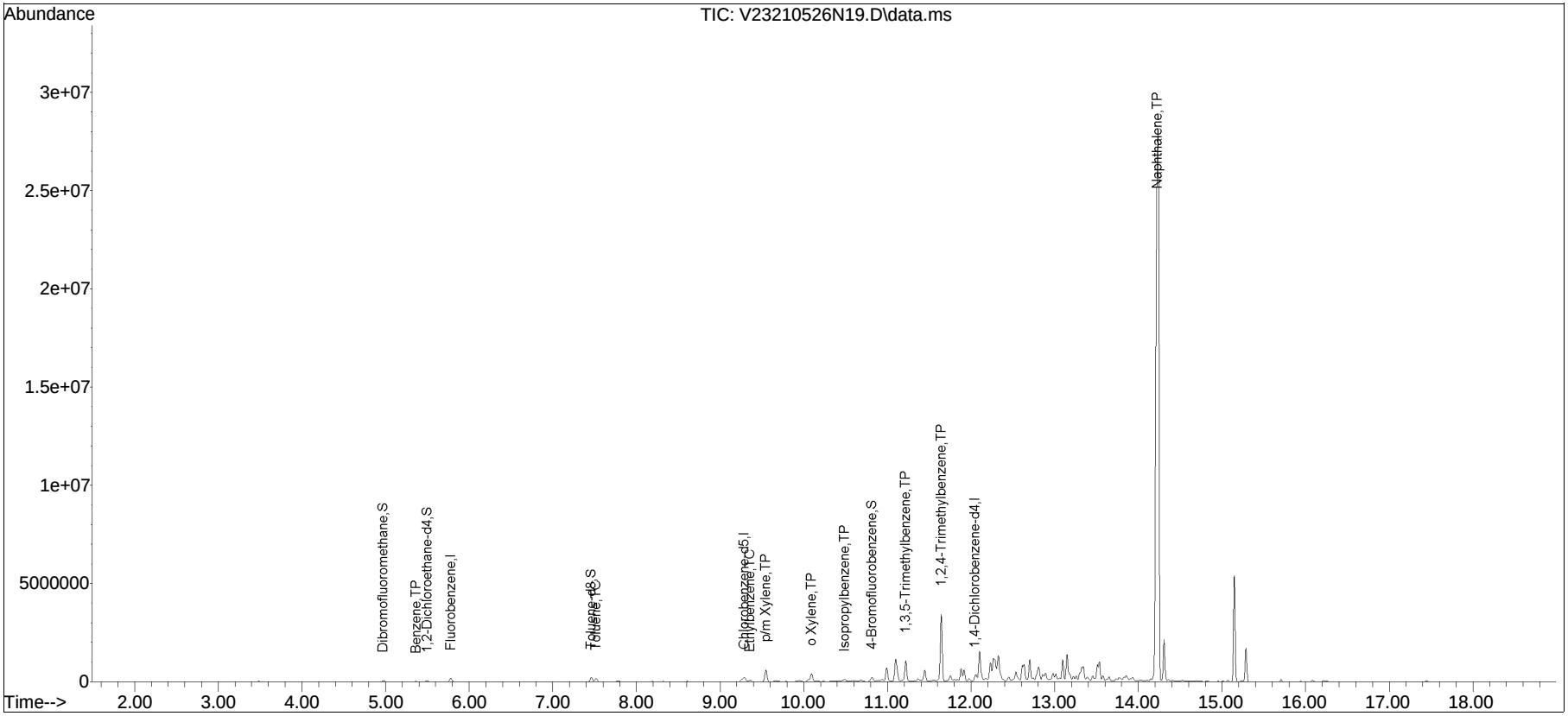
Form No: 01-14 HC (rev. 30-Sept-2013)

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA123\2021\210526N\
Data File : V23210526N19.D
Acq On : 27 May 2021 01:59 am
Operator : VOA123:JC
Sample : L2126411-17,31H,3.40,5,0.100,,A
Misc : WG1504369,ICAL17933
ALS Vial : 19 Sample Multiplier: 1

Quant Time: May 27 07:27:24 2021
Quant Method : I:\VOLATILES\VOA123\2021\210526N\V123_210512N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Thu May 13 08:11:37 2021
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list26N\V23210526N03.D•



ANALYTICAL REPORT

Lab Number:	L2126821
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY-AST CLOS
Project Number:	200.00135.005
Report Date:	06/08/21

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005

Lab Number: L2126821
Report Date: 06/08/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2126821-01	PB-663-08-SS01	SOIL	PHILADELPHIA, PA	05/20/21 08:00	05/20/21
L2126821-02	PB-663-09-SS01	SOIL	PHILADELPHIA, PA	05/20/21 08:10	05/20/21
L2126821-03	PB-663-10-SS01	SOIL	PHILADELPHIA, PA	05/20/21 08:18	05/20/21
L2126821-04	PB-663-12-SS01	SOIL	PHILADELPHIA, PA	05/20/21 08:30	05/20/21
L2126821-05	PB-663-13-SS01	SOIL	PHILADELPHIA, PA	05/20/21 08:40	05/20/21
L2126821-06	PB-663-14-SS01	SOIL	PHILADELPHIA, PA	05/20/21 08:55	05/20/21
L2126821-07	PB-672-01-SS01	SOIL	PHILADELPHIA, PA	05/20/21 09:45	05/20/21
L2126821-08	PB-672-02-SS01	SOIL	PHILADELPHIA, PA	05/20/21 09:55	05/20/21
L2126821-09	PB-672-03-SS01	SOIL	PHILADELPHIA, PA	05/20/21 10:05	05/20/21
L2126821-10	PB-672-04-SS01	SOIL	PHILADELPHIA, PA	05/20/21 10:10	05/20/21
L2126821-11	PB-672-05-SS01	SOIL	PHILADELPHIA, PA	05/20/21 10:20	05/20/21
L2126821-12	PB-672-06-SS01	SOIL	PHILADELPHIA, PA	05/20/21 10:40	05/20/21
L2126821-13	PB-672-07-SS01	SOIL	PHILADELPHIA, PA	05/20/21 10:45	05/20/21
L2126821-14	PB-672-08-SS01	SOIL	PHILADELPHIA, PA	05/20/21 11:00	05/20/21
L2126821-15	PB-672-09-SS01	SOIL	PHILADELPHIA, PA	05/20/21 11:15	05/20/21
L2126821-16	PB-672-10-SS01	SOIL	PHILADELPHIA, PA	05/20/21 11:25	05/20/21
L2126821-17	PB-672-11-SS01	SOIL	PHILADELPHIA, PA	05/20/21 11:40	05/20/21
L2126821-18	PB-672-12-SS01	SOIL	PHILADELPHIA, PA	05/20/21 11:55	05/20/21
L2126821-19	PB-672-13-SS01	SOIL	PHILADELPHIA, PA	05/20/21 12:10	05/20/21
L2126821-20	PB-672-14-SS01	SOIL	PHILADELPHIA, PA	05/20/21 12:25	05/20/21
L2126821-21	PB-672-15-SS01	SOIL	PHILADELPHIA, PA	05/20/21 13:20	05/20/21
L2126821-22	PB-672-16-SS01	SOIL	PHILADELPHIA, PA	05/20/21 13:30	05/20/21
L2126821-23	PB-672-17-SS01	SOIL	PHILADELPHIA, PA	05/20/21 13:40	05/20/21
L2126821-24	PB-672-18-SS01	SOIL	PHILADELPHIA, PA	05/20/21 13:50	05/20/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2126821-25	PB-672-19-SS01	SOIL	PHILADELPHIA, PA	05/20/21 13:55	05/20/21
L2126821-26	PB-672-20-SS01	SOIL	PHILADELPHIA, PA	05/20/21 14:10	05/20/21
L2126821-27	PB-672-21-SS01	SOIL	PHILADELPHIA, PA	05/20/21 14:15	05/20/21
L2126821-28	PB-672-22-SS01	SOIL	PHILADELPHIA, PA	05/20/21 14:30	05/20/21
L2126821-29	TB-210520	WATER	PHILADELPHIA, PA	05/20/21 00:00	05/20/21
L2126821-30	FB-210520-1	WATER	PHILADELPHIA, PA	05/20/21 14:40	05/20/21
L2126821-31	FB-210520-2	WATER	PHILADELPHIA, PA	05/20/21 14:45	05/20/21
L2126821-32	FB-210520-3	WATER	PHILADELPHIA, PA	05/20/21 15:00	05/20/21
L2126821-33	DUP-02	SOIL	PHILADELPHIA, PA	05/20/21 08:00	05/20/21

Project Name:	PHILADELPHIA REFINERY-AST CLOS	**Lab Number:**	L2126821
Project Number:	200.00135.005	**Report Date:**	06/08/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	PHILADELPHIA REFINERY-AST CLOS	**Lab Number:**	L2126821
Project Number:	200.00135.005	**Report Date:**	06/08/21

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Sample Receipt

L2126821-30: Headspace was noted in all sample containers submitted for Volatile Organics. The analysis was cancelled at the client's request.

Volatile Organics

L2126821-06: The surrogate recovery for 4-bromofluorobenzene (137%) was outside the acceptance criteria; however, re-analysis achieved a similar result: 1,4-dichlorobenzene-d4 (40%). The results of both analyses are reported.

L2126821-28: The internal standard (IS) response for 1,4-dichlorobenzene-d4 (46%) and the surrogate recovery for 4-bromofluorobenzene (131%) were outside the acceptance criteria; however, re-analysis achieved similar results: 1,4-dichlorobenzene-d4 (33%) and 4-bromofluorobenzene (137%). The results of both analyses are reported.

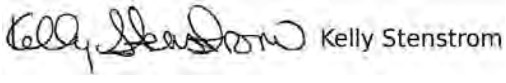
Semivolatile Organics by SIM

L2126821-01D, -02D, -03D, -08D, -09D, -11D, -17D, -20D, and -28D: The sample has elevated detection limits due to the dilution required by the sample matrix.

L2126821-06D: The sample has elevated detection limits due to the dilution required by matrix interferences encountered during the concentration of the sample.

L2126821-06D, -09D, -19D, and -26D: The surrogate recoveries are below the acceptance criteria for nitrobenzene-d5 (0%), 2-fluorobiphenyl (0%), and 4-terphenyl-d14 (0%) due to the dilution required to quantitate the sample. Re-extraction was not required; therefore, the results of the original analysis are reported.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Kelly Stenstrom

Title: Technical Director/Representative Date: 06/08/21

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-01
Client ID: PB-663-08-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 08:00
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/26/21 13:37
Analyst: MKS
Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0029	0.00029	1
Benzene	ND		mg/kg	0.00072	0.00024	1
1,2-Dichloroethane	ND		mg/kg	0.0014	0.00037	1
Toluene	ND		mg/kg	0.0014	0.00078	1
1,2-Dibromoethane	ND		mg/kg	0.00072	0.00042	1
Ethylbenzene	ND		mg/kg	0.0014	0.00020	1
p/m-Xylene	ND		mg/kg	0.0029	0.00081	1
o-Xylene	ND		mg/kg	0.0014	0.00042	1
Xylenes, Total	ND		mg/kg	0.0014	0.00042	1
Isopropylbenzene	ND		mg/kg	0.0014	0.00016	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0029	0.00028	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0029	0.00048	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	118		70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-02
Client ID: PB-663-09-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 08:10
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/26/21 14:03
Analyst: MKS
Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0036	0.00036	1
Benzene	ND		mg/kg	0.00089	0.00030	1
1,2-Dichloroethane	ND		mg/kg	0.0018	0.00046	1
Toluene	ND		mg/kg	0.0018	0.00096	1
1,2-Dibromoethane	ND		mg/kg	0.00089	0.00052	1
Ethylbenzene	ND		mg/kg	0.0018	0.00025	1
p/m-Xylene	ND		mg/kg	0.0036	0.0010	1
o-Xylene	ND		mg/kg	0.0018	0.00052	1
Xylenes, Total	ND		mg/kg	0.0018	0.00052	1
Isopropylbenzene	ND		mg/kg	0.0018	0.00019	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0036	0.00034	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0036	0.00059	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	121		70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-03
Client ID: PB-663-10-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 08:18
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/26/21 14:28
Analyst: MKS
Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0032	0.00032	1
Benzene	ND		mg/kg	0.00080	0.00027	1
1,2-Dichloroethane	ND		mg/kg	0.0016	0.00041	1
Toluene	ND		mg/kg	0.0016	0.00088	1
1,2-Dibromoethane	ND		mg/kg	0.00080	0.00047	1
Ethylbenzene	ND		mg/kg	0.0016	0.00023	1
p/m-Xylene	ND		mg/kg	0.0032	0.00090	1
o-Xylene	ND		mg/kg	0.0016	0.00047	1
Xylenes, Total	ND		mg/kg	0.0016	0.00047	1
Isopropylbenzene	ND		mg/kg	0.0016	0.00018	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0032	0.00031	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0032	0.00054	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	119		70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-04
Client ID: PB-663-12-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 08:30
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/26/21 14:53
Analyst: MKS
Percent Solids: 66%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0037	0.00037	1
Benzene	ND		mg/kg	0.00092	0.00031	1
1,2-Dichloroethane	ND		mg/kg	0.0018	0.00048	1
Toluene	ND		mg/kg	0.0018	0.0010	1
1,2-Dibromoethane	ND		mg/kg	0.00092	0.00054	1
Ethylbenzene	ND		mg/kg	0.0018	0.00026	1
p/m-Xylene	ND		mg/kg	0.0037	0.0010	1
o-Xylene	ND		mg/kg	0.0018	0.00054	1
Xylenes, Total	ND		mg/kg	0.0018	0.00054	1
Isopropylbenzene	ND		mg/kg	0.0018	0.00020	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0037	0.00036	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0037	0.00062	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	121		70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-05
Client ID: PB-663-13-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 08:40
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/26/21 15:18
Analyst: MKS
Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	115		70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-06
Client ID: PB-663-14-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 08:55
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/28/21 00:12
Analyst: MKS
Percent Solids: 70%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0057	0.00057	1
Benzene	0.0015		mg/kg	0.0014	0.00047	1
1,2-Dichloroethane	ND		mg/kg	0.0028	0.00073	1
Toluene	0.0016	J	mg/kg	0.0028	0.0015	1
1,2-Dibromoethane	ND		mg/kg	0.0014	0.00083	1
Ethylbenzene	0.00052	J	mg/kg	0.0028	0.00040	1
p/m-Xylene	ND		mg/kg	0.0057	0.0016	1
o-Xylene	0.0013	J	mg/kg	0.0028	0.00083	1
Xylenes, Total	0.0013	J	mg/kg	0.0028	0.00083	1
Isopropylbenzene	ND		mg/kg	0.0028	0.00031	1
1,3,5-Trimethylbenzene	0.0017	J	mg/kg	0.0057	0.00055	1
1,2,4-Trimethylbenzene	0.0015	J	mg/kg	0.0057	0.00095	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	130		70-130
Toluene-d8	108		70-130
4-Bromofluorobenzene	**137**	Q	70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-06 R
Client ID: PB-663-14-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 08:55
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/30/21 10:05
Analyst: NLK
Percent Solids: 70%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0044	0.00044	1
Benzene	0.028		mg/kg	0.0011	0.00037	1
1,2-Dichloroethane	ND		mg/kg	0.0022	0.00057	1
Toluene	0.071		mg/kg	0.0022	0.0012	1
1,2-Dibromoethane	ND		mg/kg	0.0011	0.00065	1
Ethylbenzene	0.016		mg/kg	0.0022	0.00031	1
p/m-Xylene	0.045		mg/kg	0.0044	0.0012	1
o-Xylene	0.027		mg/kg	0.0022	0.00064	1
Xylenes, Total	0.072		mg/kg	0.0022	0.00064	1
Isopropylbenzene	0.0026		mg/kg	0.0022	0.00024	1
1,3,5-Trimethylbenzene	0.0043	J	mg/kg	0.0044	0.00043	1
1,2,4-Trimethylbenzene	0.014		mg/kg	0.0044	0.00074	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	130		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-07
Client ID: PB-672-01-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 09:45
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/28/21 00:37
Analyst: MKS
Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00057	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	126		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	124		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-08
Client ID: PB-672-02-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 09:55
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/28/21 01:02
Analyst: MKS
Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	125		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	121		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-09
Client ID: PB-672-03-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 10:05
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/28/21 01:27
Analyst: MKS
Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	ND		mg/kg	0.00058	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00063	1
1,2-Dibromoethane	ND		mg/kg	0.00058	0.00034	1
Ethylbenzene	ND		mg/kg	0.0012	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00065	1
o-Xylene	ND		mg/kg	0.0012	0.00034	1
Xylenes, Total	ND		mg/kg	0.0012	0.00034	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	124		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	123		70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-10
Client ID: PB-672-04-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 10:10
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/28/21 01:53
Analyst: MKS
Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	ND		mg/kg	0.00043	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00086	0.00022	1
Toluene	ND		mg/kg	0.00086	0.00047	1
1,2-Dibromoethane	ND		mg/kg	0.00043	0.00025	1
Ethylbenzene	ND		mg/kg	0.00086	0.00012	1
p/m-Xylene	ND		mg/kg	0.0017	0.00048	1
o-Xylene	ND		mg/kg	0.00086	0.00025	1
Xylenes, Total	ND		mg/kg	0.00086	0.00025	1
Isopropylbenzene	ND		mg/kg	0.00086	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0017	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	128		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	122		70-130
Dibromofluoromethane	101		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-11
Client ID: PB-672-05-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 10:20
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/28/21 02:18
Analyst: MKS
Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	ND		mg/kg	0.00060	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00031	1
Toluene	ND		mg/kg	0.0012	0.00065	1
1,2-Dibromoethane	ND		mg/kg	0.00060	0.00035	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00067	1
o-Xylene	ND		mg/kg	0.0012	0.00035	1
Xylenes, Total	ND		mg/kg	0.0012	0.00035	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00040	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	125		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	121		70-130
Dibromofluoromethane	101		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-12
Client ID: PB-672-06-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 10:40
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/28/21 02:43
Analyst: MKS
Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00096	0.00025	1
Toluene	ND		mg/kg	0.00096	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00096	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00096	0.00028	1
Xylenes, Total	ND		mg/kg	0.00096	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00096	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	124		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	125		70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-13
Client ID: PB-672-07-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 10:45
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/28/21 03:08
Analyst: MKS
Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0030	0.00030	1
Benzene	ND		mg/kg	0.00074	0.00025	1
1,2-Dichloroethane	ND		mg/kg	0.0015	0.00038	1
Toluene	ND		mg/kg	0.0015	0.00081	1
1,2-Dibromoethane	ND		mg/kg	0.00074	0.00044	1
Ethylbenzene	ND		mg/kg	0.0015	0.00021	1
p/m-Xylene	ND		mg/kg	0.0030	0.00083	1
o-Xylene	ND		mg/kg	0.0015	0.00043	1
Xylenes, Total	ND		mg/kg	0.0015	0.00043	1
Isopropylbenzene	ND		mg/kg	0.0015	0.00016	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0030	0.00029	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0030	0.00050	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	125		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	123		70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-14
Client ID: PB-672-08-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 11:00
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/28/21 03:33
Analyst: MKS
Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00021	1
Benzene	ND		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00056	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00058	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	128		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	122		70-130
Dibromofluoromethane	101		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-15
Client ID: PB-672-09-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 11:15
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/28/21 03:59
Analyst: MKS
Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00047	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00094	0.00024	1
Toluene	ND		mg/kg	0.00094	0.00051	1
1,2-Dibromoethane	ND		mg/kg	0.00047	0.00028	1
Ethylbenzene	ND		mg/kg	0.00094	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00053	1
o-Xylene	ND		mg/kg	0.00094	0.00027	1
Xylenes, Total	ND		mg/kg	0.00094	0.00027	1
Isopropylbenzene	ND		mg/kg	0.00094	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	125		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	122		70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-16
Client ID: PB-672-10-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 11:25
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/28/21 04:24
Analyst: MKS
Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00020	1
Benzene	ND		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00097	0.00025	1
Toluene	ND		mg/kg	0.00097	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00028	1
Ethylbenzene	ND		mg/kg	0.00097	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00097	0.00028	1
Xylenes, Total	ND		mg/kg	0.00097	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00097	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	127		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	122		70-130
Dibromofluoromethane	102		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-17
Client ID: PB-672-11-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 11:40
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/28/21 04:49
Analyst: MKS
Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	0.00043		mg/kg	0.00043	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00086	0.00022	1
Toluene	ND		mg/kg	0.00086	0.00047	1
1,2-Dibromoethane	ND		mg/kg	0.00043	0.00025	1
Ethylbenzene	ND		mg/kg	0.00086	0.00012	1
p/m-Xylene	ND		mg/kg	0.0017	0.00048	1
o-Xylene	ND		mg/kg	0.00086	0.00025	1
Xylenes, Total	ND		mg/kg	0.00086	0.00025	1
Isopropylbenzene	ND		mg/kg	0.00086	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0017	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	128		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	121		70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-18
Client ID: PB-672-12-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 11:55
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/30/21 07:38
Analyst: NLK
Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00022	1
Benzene	ND		mg/kg	0.00054	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00058	1
1,2-Dibromoethane	ND		mg/kg	0.00054	0.00031	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00060	1
o-Xylene	ND		mg/kg	0.0011	0.00031	1
Xylenes, Total	ND		mg/kg	0.0011	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	81		70-130
Toluene-d8	113		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	83		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-19
Client ID: PB-672-13-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 12:10
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/30/21 09:44
Analyst: NLK
Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0025	0.00025	1
Benzene	ND		mg/kg	0.00063	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00032	1
Toluene	ND		mg/kg	0.0013	0.00069	1
1,2-Dibromoethane	ND		mg/kg	0.00063	0.00037	1
Ethylbenzene	0.00032	J	mg/kg	0.0013	0.00018	1
p/m-Xylene	ND		mg/kg	0.0025	0.00071	1
o-Xylene	0.00049	J	mg/kg	0.0013	0.00037	1
Xylenes, Total	0.00049	J	mg/kg	0.0013	0.00037	1
Isopropylbenzene	0.00026	J	mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	0.0011	J	mg/kg	0.0025	0.00024	1
1,2,4-Trimethylbenzene	0.0028		mg/kg	0.0025	0.00042	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	86		70-130
Toluene-d8	115		70-130
4-Bromofluorobenzene	113		70-130
Dibromofluoromethane	83		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-20
Client ID: PB-672-14-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 12:25
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/30/21 07:59
Analyst: NLK
Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	ND		mg/kg	0.00058	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00063	1
1,2-Dibromoethane	ND		mg/kg	0.00058	0.00034	1
Ethylbenzene	ND		mg/kg	0.0012	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00065	1
o-Xylene	ND		mg/kg	0.0012	0.00034	1
Xylenes, Total	ND		mg/kg	0.0012	0.00034	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	86		70-130
Toluene-d8	126		70-130
4-Bromofluorobenzene	117		70-130
Dibromofluoromethane	88		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-21
Client ID: PB-672-15-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 13:20
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/30/21 08:20
Analyst: NLK
Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00098	0.00025	1
Toluene	ND		mg/kg	0.00098	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00028	1
Ethylbenzene	ND		mg/kg	0.00098	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00098	0.00028	1
Xylenes, Total	ND		mg/kg	0.00098	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00098	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	102		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-22
Client ID: PB-672-16-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 13:30
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/28/21 18:52
Analyst: MKS
Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00044	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00088	0.00023	1
Toluene	ND		mg/kg	0.00088	0.00048	1
1,2-Dibromoethane	ND		mg/kg	0.00044	0.00026	1
Ethylbenzene	ND		mg/kg	0.00088	0.00012	1
p/m-Xylene	ND		mg/kg	0.0018	0.00049	1
o-Xylene	ND		mg/kg	0.00088	0.00026	1
Xylenes, Total	ND		mg/kg	0.00088	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00088	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	126		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	122		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-23
Client ID: PB-672-17-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 13:40
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/30/21 08:41
Analyst: NLK
Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-24
Client ID: PB-672-18-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 13:50
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/28/21 19:33
Analyst: MKS
Percent Solids: 78%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0026	0.00026	1
Benzene	ND		mg/kg	0.00065	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00033	1
Toluene	ND		mg/kg	0.0013	0.00071	1
1,2-Dibromoethane	ND		mg/kg	0.00065	0.00038	1
Ethylbenzene	ND		mg/kg	0.0013	0.00018	1
p/m-Xylene	ND		mg/kg	0.0026	0.00073	1
o-Xylene	ND		mg/kg	0.0013	0.00038	1
Xylenes, Total	ND		mg/kg	0.0013	0.00038	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0026	0.00025	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0026	0.00043	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	121		70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	123		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-25
Client ID: PB-672-19-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 13:55
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/28/21 19:54
Analyst: MKS
Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00096	0.00025	1
Toluene	ND		mg/kg	0.00096	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00096	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00096	0.00028	1
Xylenes, Total	ND		mg/kg	0.00096	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00096	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	124		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	120		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-26
Client ID: PB-672-20-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 14:10
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/28/21 20:15
Analyst: MKS
Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00056	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00061	1
1,2-Dibromoethane	ND		mg/kg	0.00056	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0022	0.00063	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	119		70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	118		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-27
Client ID: PB-672-21-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 14:15
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/28/21 20:36
Analyst: MKS
Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	0.0014		mg/kg	0.00052	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	0.0019		mg/kg	0.0010	0.00056	1
1,2-Dibromoethane	ND		mg/kg	0.00052	0.00030	1
Ethylbenzene	0.00029	J	mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0021	0.00058	1
o-Xylene	0.00072	J	mg/kg	0.0010	0.00030	1
Xylenes, Total	0.00072	J	mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	121		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	120		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-28
Client ID: PB-672-22-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 14:30
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/28/21 20:57
Analyst: MKS
Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0028	0.00028	1
Benzene	ND		mg/kg	0.00071	0.00024	1
1,2-Dichloroethane	ND		mg/kg	0.0014	0.00036	1
Toluene	ND		mg/kg	0.0014	0.00077	1
1,2-Dibromoethane	ND		mg/kg	0.00071	0.00042	1
Ethylbenzene	ND		mg/kg	0.0014	0.00020	1
p/m-Xylene	ND		mg/kg	0.0028	0.00080	1
o-Xylene	0.00050	J	mg/kg	0.0014	0.00041	1
Xylenes, Total	0.00050	J	mg/kg	0.0014	0.00041	1
Isopropylbenzene	ND		mg/kg	0.0014	0.00015	1
1,3,5-Trimethylbenzene	0.0010	J	mg/kg	0.0028	0.00027	1
1,2,4-Trimethylbenzene	0.00066	J	mg/kg	0.0028	0.00047	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	126		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	**131**	Q	70-130
Dibromofluoromethane	125		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-28 R
Client ID: PB-672-22-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 14:30
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/30/21 09:02
Analyst: NLK
Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	ND		mg/kg	0.00057	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00057	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00064	1
o-Xylene	0.00057	J	mg/kg	0.0011	0.00033	1
Xylenes, Total	0.00057	J	mg/kg	0.0011	0.00033	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	0.00086	J	mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	0.00080	J	mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	**137**	Q	70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-29
Client ID: TB-210520
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 00:00
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8011
Analytical Date: 05/24/21 17:49
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 05/24/21 15:38

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	B

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-29 Date Collected: 05/20/21 00:00
Client ID: TB-210520 Date Received: 05/20/21
Sample Location: PHILADELPHIA, PA Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 05/28/21 11:04
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	88		70-130
Dibromofluoromethane	123		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-30
Client ID: FB-210520-1
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 14:40
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8011
Analytical Date: 05/24/21 17:55
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 05/24/21 15:38

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	B

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-31
Client ID: FB-210520-2
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 14:45
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8011
Analytical Date: 05/24/21 18:01
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 05/24/21 15:38

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	B

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-31 Date Collected: 05/20/21 14:45
Client ID: FB-210520-2 Date Received: 05/20/21
Sample Location: PHILADELPHIA, PA Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 05/25/21 11:50
Analyst: KTD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	114		70-130
Toluene-d8	87		70-130
4-Bromofluorobenzene	77		70-130
Dibromofluoromethane	121		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-32
Client ID: FB-210520-3
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 15:00
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8011
Analytical Date: 05/24/21 18:08
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 05/24/21 15:38

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	B

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-32 Date Collected: 05/20/21 15:00
Client ID: FB-210520-3 Date Received: 05/20/21
Sample Location: PHILADELPHIA, PA Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 05/25/21 12:15
Analyst: KTD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	88		70-130
4-Bromofluorobenzene	79		70-130
Dibromofluoromethane	117		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-33
Client ID: DUP-02
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 08:00
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/30/21 09:23
Analyst: NLK
Percent Solids: 75%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0032	0.00032	1
Benzene	ND		mg/kg	0.00080	0.00026	1
1,2-Dichloroethane	ND		mg/kg	0.0016	0.00041	1
Toluene	ND		mg/kg	0.0016	0.00087	1
1,2-Dibromoethane	ND		mg/kg	0.00080	0.00047	1
Ethylbenzene	ND		mg/kg	0.0016	0.00022	1
p/m-Xylene	ND		mg/kg	0.0032	0.00090	1
o-Xylene	ND		mg/kg	0.0016	0.00046	1
Xylenes, Total	ND		mg/kg	0.0016	0.00046	1
Isopropylbenzene	ND		mg/kg	0.0016	0.00017	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0032	0.00031	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0032	0.00053	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	102		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126821
Report Date: 06/08/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8011
Analytical Date: 05/24/21 16:40
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 05/24/21 15:38

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 29-32 Batch: WG1502976-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.005	B

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 05/25/21 08:53
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 31-32 Batch: WG1503616-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	89		70-130
4-Bromofluorobenzene	78		70-130
Dibromofluoromethane	121		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 05/26/21 08:07
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01-05 Batch: WG1504146-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	113		70-130
Dibromofluoromethane	92		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 05/27/21 21:41
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 06-17 Batch: WG1504906-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	0.00065	J	mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	122		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	123		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 05/28/21 10:40
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 29 Batch: WG1505308-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	87		70-130
Dibromofluoromethane	124		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 05/28/21 16:46
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 22,24-28 Batch: WG1505377-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	119		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	115		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 05/30/21 07:17
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 06,18-21,23,28,33 Batch: WG1506022-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	98		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126821

Report Date: 06/08/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab	Associated sample(s): 29-32 Batch: WG1502976-2								
1,2-Dibromoethane	90		-		80-120	-		20	B

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126821

Report Date: 06/08/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 31-32 Batch: WG1503616-3 WG1503616-4								
Methyl tert butyl ether	89		89		63-130	0		20
Benzene	96		90		70-130	6		20
1,2-Dichloroethane	100		100		70-130	0		20
Toluene	91		86		70-130	6		20
Ethylbenzene	93		91		70-130	2		20
p/m-Xylene	100		95		70-130	5		20
o-Xylene	95		95		70-130	0		20
Isopropylbenzene	88		86		70-130	2		20
1,3,5-Trimethylbenzene	88		84		64-130	5		20
1,2,4-Trimethylbenzene	88		85		70-130	3		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	96		100		70-130
Toluene-d8	89		90		70-130
4-Bromofluorobenzene	76		79		70-130
Dibromofluoromethane	110		112		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126821

Report Date: 06/08/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01-05 Batch: WG1504146-3 WG1504146-4								
Methyl tert butyl ether	118		119		66-130	1		30
Benzene	116		113		70-130	3		30
1,2-Dichloroethane	113		113		70-130	0		30
Toluene	115		112		70-130	3		30
1,2-Dibromoethane	109		110		70-130	1		30
Ethylbenzene	113		110		70-130	3		30
p/m-Xylene	104		101		70-130	3		30
o-Xylene	103		101		70-130	2		30
Isopropylbenzene	117		111		70-130	5		30
1,3,5-Trimethylbenzene	113		109		70-130	4		30
1,2,4-Trimethylbenzene	111		107		70-130	4		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	101		102		70-130
Toluene-d8	106		106		70-130
4-Bromofluorobenzene	113		113		70-130
Dibromofluoromethane	92		92		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126821

Report Date: 06/08/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 06-17 Batch: WG1504906-3 WG1504906-4								
Methyl tert butyl ether	103		109		66-130	6		30
Benzene	107		105		70-130	2		30
1,2-Dichloroethane	120		124		70-130	3		30
Toluene	108		104		70-130	4		30
1,2-Dibromoethane	100		103		70-130	3		30
Ethylbenzene	109		105		70-130	4		30
p/m-Xylene	99		96		70-130	3		30
o-Xylene	100		97		70-130	3		30
Isopropylbenzene	114		111		70-130	3		30
1,3,5-Trimethylbenzene	113		110		70-130	3		30
1,2,4-Trimethylbenzene	112		109		70-130	3		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	115		119		70-130
Toluene-d8	104		104		70-130
4-Bromofluorobenzene	121		118		70-130
Dibromofluoromethane	96		98		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126821

Report Date: 06/08/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 29 Batch: WG1505308-3 WG1505308-4								
Methyl tert butyl ether	95		95		63-130	0		20
Benzene	100		100		70-130	0		20
1,2-Dichloroethane	98		98		70-130	0		20
Toluene	95		93		70-130	2		20
Ethylbenzene	97		96		70-130	1		20
p/m-Xylene	100		100		70-130	0		20
o-Xylene	95		100		70-130	5		20
Isopropylbenzene	94		95		70-130	1		20
1,3,5-Trimethylbenzene	91		91		64-130	0		20
1,2,4-Trimethylbenzene	93		93		70-130	0		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	93		91		70-130
Toluene-d8	92		93		70-130
4-Bromofluorobenzene	90		91		70-130
Dibromofluoromethane	103		103		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126821

Report Date: 06/08/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 22,24-28 Batch: WG1505377-3 WG1505377-4								
Methyl tert butyl ether	105		110		66-130	5		30
Benzene	111		106		70-130	5		30
1,2-Dichloroethane	115		112		70-130	3		30
Toluene	108		97		70-130	11		30
1,2-Dibromoethane	120		116		70-130	3		30
Ethylbenzene	105		98		70-130	7		30
p/m-Xylene	112		103		70-130	8		30
o-Xylene	110		101		70-130	9		30
Isopropylbenzene	96		92		70-130	4		30
1,3,5-Trimethylbenzene	105		97		70-130	8		30
1,2,4-Trimethylbenzene	106		99		70-130	7		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	100		101		70-130
Toluene-d8	102		98		70-130
4-Bromofluorobenzene	91		94		70-130
Dibromofluoromethane	97		98		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126821

Report Date: 06/08/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 06,18-21,23,28,33 Batch: WG1506022-3 WG1506022-4								
Methyl tert butyl ether	97		97		66-130	0		30
Benzene	93		93		70-130	0		30
1,2-Dichloroethane	91		92		70-130	1		30
Toluene	88		89		70-130	1		30
1,2-Dibromoethane	107		106		70-130	1		30
Ethylbenzene	86		86		70-130	0		30
p/m-Xylene	91		90		70-130	1		30
o-Xylene	90		89		70-130	1		30
Isopropylbenzene	89		90		70-130	1		30
1,3,5-Trimethylbenzene	88		89		70-130	1		30
1,2,4-Trimethylbenzene	89		90		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	89		89		70-130
Toluene-d8	97		96		70-130
4-Bromofluorobenzene	96		97		70-130
Dibromofluoromethane	92		92		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-01 D
Client ID: PB-663-08-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 08:00
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/03/21 15:28
Analyst: DV
Percent Solids: 91%

Extraction Method: EPA 3546
Extraction Date: 06/01/21 23:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.089		mg/kg	0.036	0.0065	5
Fluorene	0.082		mg/kg	0.036	0.0043	5
Phenanthrene	1.1		mg/kg	0.036	0.0031	5
Anthracene	0.32		mg/kg	0.036	0.0029	5
Pyrene	1.5		mg/kg	0.036	0.0025	5
Benzo(a)anthracene	1.2		mg/kg	0.036	0.0034	5
Chrysene	0.84		mg/kg	0.036	0.0027	5
Benzo(b)fluoranthene	1.3		mg/kg	0.036	0.0034	5
Benzo(a)pyrene	0.96		mg/kg	0.036	0.0043	5
Benzo(ghi)perylene	0.59		mg/kg	0.036	0.0031	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	**137**	Q	23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	69		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-02 D
Client ID: PB-663-09-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 08:10
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/04/21 17:59
Analyst: DV
Percent Solids: 91%

Extraction Method: EPA 3546
Extraction Date: 06/01/21 23:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.014	J	mg/kg	0.072	0.013	10
Fluorene	0.10		mg/kg	0.072	0.0086	10
Phenanthrene	2.4		mg/kg	0.072	0.0061	10
Anthracene	0.85		mg/kg	0.072	0.0057	10
Pyrene	2.4		mg/kg	0.072	0.0050	10
Benzo(a)anthracene	0.34		mg/kg	0.072	0.0068	10
Chrysene	0.32		mg/kg	0.072	0.0054	10
Benzo(b)fluoranthene	0.56		mg/kg	0.072	0.0068	10
Benzo(a)pyrene	0.37		mg/kg	0.072	0.0086	10
Benzo(ghi)perylene	0.38		mg/kg	0.072	0.0061	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	103		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	48		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-03 D
Client ID: PB-663-10-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 08:18
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/03/21 16:01
Analyst: DV
Percent Solids: 83%

Extraction Method: EPA 3546
Extraction Date: 06/01/21 23:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.098		mg/kg	0.016	0.0028	2
Fluorene	0.27		mg/kg	0.016	0.0019	2
Phenanthrene	1.0		mg/kg	0.016	0.0013	2
Anthracene	0.17		mg/kg	0.016	0.0013	2
Pyrene	0.40		mg/kg	0.016	0.0011	2
Benzo(a)anthracene	0.11		mg/kg	0.016	0.0015	2
Chrysene	0.087		mg/kg	0.016	0.0012	2
Benzo(b)fluoranthene	0.13		mg/kg	0.016	0.0015	2
Benzo(a)pyrene	0.096		mg/kg	0.016	0.0019	2
Benzo(ghi)perylene	0.079		mg/kg	0.016	0.0013	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	**148**	Q	23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	64		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-04
Client ID: PB-663-12-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 08:30
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/03/21 12:29
Analyst: JJW
Percent Solids: 66%

Extraction Method: EPA 3546
Extraction Date: 06/01/21 23:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.014		mg/kg	0.010	0.0018	1
Fluorene	0.037		mg/kg	0.010	0.0012	1
Phenanthrene	0.14		mg/kg	0.010	0.00085	1
Anthracene	0.032		mg/kg	0.010	0.00080	1
Pyrene	0.067		mg/kg	0.010	0.00070	1
Benzo(a)anthracene	0.022		mg/kg	0.010	0.00096	1
Chrysene	0.016		mg/kg	0.010	0.00075	1
Benzo(b)fluoranthene	0.024		mg/kg	0.010	0.00096	1
Benzo(a)pyrene	0.017		mg/kg	0.010	0.0012	1
Benzo(ghi)perylene	0.013		mg/kg	0.010	0.00085	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	**133**	Q	23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	60		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-05
Client ID: PB-663-13-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 08:40
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/03/21 12:46
Analyst: JJW
Percent Solids: 86%

Extraction Method: EPA 3546
Extraction Date: 06/01/21 23:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.0019	J	mg/kg	0.0077	0.0014	1
Fluorene	0.0018	J	mg/kg	0.0077	0.00092	1
Phenanthrene	0.015		mg/kg	0.0077	0.00065	1
Anthracene	0.0078		mg/kg	0.0077	0.00061	1
Pyrene	0.053		mg/kg	0.0077	0.00054	1
Benzo(a)anthracene	0.055		mg/kg	0.0077	0.00073	1
Chrysene	0.038		mg/kg	0.0077	0.00057	1
Benzo(b)fluoranthene	0.040		mg/kg	0.0077	0.00073	1
Benzo(a)pyrene	0.024		mg/kg	0.0077	0.00092	1
Benzo(ghi)perylene	0.0084		mg/kg	0.0077	0.00065	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	114		23-120
2-Fluorobiphenyl	59		30-120
4-Terphenyl-d14	50		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-06 D
Client ID: PB-663-14-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 08:55
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/03/21 16:17
Analyst: DV
Percent Solids: 70%

Extraction Method: EPA 3546
Extraction Date: 06/01/21 23:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	1.1		mg/kg	0.48	0.086	50
Fluorene	2.6		mg/kg	0.48	0.057	50
Phenanthrene	19.		mg/kg	0.48	0.040	50
Anthracene	6.2		mg/kg	0.48	0.038	50
Pyrene	24.		mg/kg	0.48	0.033	50
Benzo(a)anthracene	14.		mg/kg	0.48	0.045	50
Chrysene	11.		mg/kg	0.48	0.036	50
Benzo(b)fluoranthene	19.		mg/kg	0.48	0.045	50
Benzo(a)pyrene	18.		mg/kg	0.48	0.057	50
Benzo(ghi)perylene	12.		mg/kg	0.48	0.040	50

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	**0**	Q	23-120
2-Fluorobiphenyl	**0**	Q	30-120
4-Terphenyl-d14	**0**	Q	18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-07
Client ID: PB-672-01-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 09:45
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/03/21 13:02
Analyst: JJW
Percent Solids: 87%

Extraction Method: EPA 3546
Extraction Date: 06/01/21 23:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.0068	J	mg/kg	0.0075	0.0013	1
Fluorene	0.017		mg/kg	0.0075	0.00090	1
Phenanthrene	0.21		mg/kg	0.0075	0.00064	1
Anthracene	0.054		mg/kg	0.0075	0.00060	1
Pyrene	0.28		mg/kg	0.0075	0.00052	1
Benzo(a)anthracene	0.20		mg/kg	0.0075	0.00071	1
Chrysene	0.15		mg/kg	0.0075	0.00056	1
Benzo(b)fluoranthene	0.25		mg/kg	0.0075	0.00071	1
Benzo(a)pyrene	0.18		mg/kg	0.0075	0.00090	1
Benzo(ghi)perylene	0.12		mg/kg	0.0075	0.00064	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	**125**	Q	23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	66		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-08 D
Client ID: PB-672-02-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 09:55
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/04/21 18:16
Analyst: DV
Percent Solids: 85%

Extraction Method: EPA 3546
Extraction Date: 06/01/21 23:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.035	J	mg/kg	0.076	0.014	10
Fluorene	0.14		mg/kg	0.076	0.0091	10
Phenanthrene	2.9		mg/kg	0.076	0.0065	10
Anthracene	0.53		mg/kg	0.076	0.0061	10
Pyrene	3.7		mg/kg	0.076	0.0053	10
Benzo(a)anthracene	2.0		mg/kg	0.076	0.0072	10
Chrysene	1.8		mg/kg	0.076	0.0057	10
Benzo(b)fluoranthene	2.2		mg/kg	0.076	0.0072	10
Benzo(a)pyrene	1.7		mg/kg	0.076	0.0091	10
Benzo(ghi)perylene	1.0		mg/kg	0.076	0.0065	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	108		23-120
2-Fluorobiphenyl	90		30-120
4-Terphenyl-d14	74		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126821
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-09 D
Client ID: PB-672-03-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 10:05
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/04/21 18:32
Analyst: DV
Percent Solids: 85%

Extraction Method: EPA 3546
Extraction Date: 06/01/21 23:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	2.4		mg/kg	0.20	0.035	25
Fluorene	1.8		mg/kg	0.20	0.023	25
Phenanthrene	15.		mg/kg	0.20	0.016	25
Anthracene	3.8		mg/kg	0.20	0.016	25
Pyrene	14.		mg/kg	0.20	0.014	25
Benzo(a)anthracene	7.9		mg/kg	0.20	0.018	25
Chrysene	6.6		mg/kg	0.20	0.015	25
Benzo(b)fluoranthene	8.1		mg/kg	0.20	0.018	25
Benzo(a)pyrene	6.5		mg/kg	0.20	0.023	25
Benzo(ghi)perylene	3.3		mg/kg	0.20	0.016	25

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	**0**	Q	23-120
2-Fluorobiphenyl	**0**	Q	30-120
4-Terphenyl-d14	**0**	Q	18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-10
Client ID: PB-672-04-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 10:10
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/03/21 13:18
Analyst: JJW
Percent Solids: 86%

Extraction Method: EPA 3546
Extraction Date: 06/01/21 23:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.011		mg/kg	0.0078	0.0014	1
Fluorene	0.0035	J	mg/kg	0.0078	0.00093	1
Phenanthrene	0.078		mg/kg	0.0078	0.00066	1
Anthracene	0.017		mg/kg	0.0078	0.00062	1
Pyrene	0.12		mg/kg	0.0078	0.00054	1
Benzo(a)anthracene	0.094		mg/kg	0.0078	0.00074	1
Chrysene	0.068		mg/kg	0.0078	0.00058	1
Benzo(b)fluoranthene	0.10		mg/kg	0.0078	0.00074	1
Benzo(a)pyrene	0.083		mg/kg	0.0078	0.00093	1
Benzo(ghi)perylene	0.042		mg/kg	0.0078	0.00066	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	**122**	Q	23-120
2-Fluorobiphenyl	64		30-120
4-Terphenyl-d14	58		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-11 D
Client ID: PB-672-05-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 10:20
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/04/21 18:49
Analyst: DV
Percent Solids: 86%

Extraction Method: EPA 3546
Extraction Date: 06/01/21 23:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		mg/kg	0.038	0.0068	5
Fluorene	0.0089	J	mg/kg	0.038	0.0045	5
Phenanthrene	0.099		mg/kg	0.038	0.0032	5
Anthracene	0.071		mg/kg	0.038	0.0030	5
Pyrene	1.1		mg/kg	0.038	0.0026	5
Benzo(a)anthracene	0.80		mg/kg	0.038	0.0036	5
Chrysene	0.64		mg/kg	0.038	0.0028	5
Benzo(b)fluoranthene	0.92		mg/kg	0.038	0.0036	5
Benzo(a)pyrene	0.78		mg/kg	0.038	0.0045	5
Benzo(ghi)perylene	0.45		mg/kg	0.038	0.0032	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	101		23-120
2-Fluorobiphenyl	79		30-120
4-Terphenyl-d14	62		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-12
Client ID: PB-672-06-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 10:40
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/03/21 13:51
Analyst: DV
Percent Solids: 86%

Extraction Method: EPA 3546
Extraction Date: 06/01/21 23:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		mg/kg	0.0076	0.0014	1
Fluorene	0.0010	J	mg/kg	0.0076	0.00091	1
Phenanthrene	0.0045	J	mg/kg	0.0076	0.00064	1
Anthracene	0.00098	J	mg/kg	0.0076	0.00060	1
Pyrene	0.0025	J	mg/kg	0.0076	0.00053	1
Benzo(a)anthracene	0.0013	J	mg/kg	0.0076	0.00072	1
Chrysene	0.00087	J	mg/kg	0.0076	0.00057	1
Benzo(b)fluoranthene	0.0016	J	mg/kg	0.0076	0.00072	1
Benzo(a)pyrene	0.0011	J	mg/kg	0.0076	0.00091	1
Benzo(ghi)perylene	0.0017	J	mg/kg	0.0076	0.00064	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	**125**	Q	23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	62		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-13
Client ID: PB-672-07-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 10:45
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/03/21 14:07
Analyst: DV
Percent Solids: 85%

Extraction Method: EPA 3546
Extraction Date: 06/02/21 00:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.0037	J	mg/kg	0.0077	0.0014	1
Fluorene	0.0012	J	mg/kg	0.0077	0.00092	1
Phenanthrene	0.058		mg/kg	0.0077	0.00065	1
Anthracene	0.014		mg/kg	0.0077	0.00062	1
Pyrene	0.22		mg/kg	0.0077	0.00054	1
Benzo(a)anthracene	0.16		mg/kg	0.0077	0.00073	1
Chrysene	0.13		mg/kg	0.0077	0.00058	1
Benzo(b)fluoranthene	0.21		mg/kg	0.0077	0.00073	1
Benzo(a)pyrene	0.15		mg/kg	0.0077	0.00092	1
Benzo(ghi)perylene	0.10		mg/kg	0.0077	0.00065	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	**136**	Q	23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	68		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-14 D
Client ID: PB-672-08-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 11:00
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/04/21 19:05
Analyst: DV
Percent Solids: 84%

Extraction Method: EPA 3546
Extraction Date: 06/02/21 00:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.020	J	mg/kg	0.039	0.0071	5
Fluorene	0.19		mg/kg	0.039	0.0047	5
Phenanthrene	2.6		mg/kg	0.039	0.0034	5
Anthracene	0.68		mg/kg	0.039	0.0032	5
Pyrene	2.7		mg/kg	0.039	0.0028	5
Benzo(a)anthracene	1.4		mg/kg	0.039	0.0038	5
Chrysene	1.2		mg/kg	0.039	0.0030	5
Benzo(b)fluoranthene	1.2		mg/kg	0.039	0.0038	5
Benzo(a)pyrene	1.1		mg/kg	0.039	0.0047	5
Benzo(ghi)perylene	0.58		mg/kg	0.039	0.0034	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	103		23-120
2-Fluorobiphenyl	85		30-120
4-Terphenyl-d14	64		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-15
Client ID: PB-672-09-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 11:15
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/03/21 14:40
Analyst: DV
Percent Solids: 84%

Extraction Method: EPA 3546
Extraction Date: 06/02/21 00:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.0023	J	mg/kg	0.0078	0.0014	1
Fluorene	ND		mg/kg	0.0078	0.00094	1
Phenanthrene	0.0018	J	mg/kg	0.0078	0.00066	1
Anthracene	0.0021	J	mg/kg	0.0078	0.00062	1
Pyrene	0.012		mg/kg	0.0078	0.00055	1
Benzo(a)anthracene	0.013		mg/kg	0.0078	0.00074	1
Chrysene	0.012		mg/kg	0.0078	0.00059	1
Benzo(b)fluoranthene	0.032		mg/kg	0.0078	0.00074	1
Benzo(a)pyrene	0.023		mg/kg	0.0078	0.00094	1
Benzo(ghi)perylene	0.023		mg/kg	0.0078	0.00066	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	**145**	Q	23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	68		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-16
Client ID: PB-672-10-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 11:25
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/03/21 14:56
Analyst: DV
Percent Solids: 85%

Extraction Method: EPA 3546
Extraction Date: 06/02/21 00:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		mg/kg	0.0076	0.0014	1
Fluorene	ND		mg/kg	0.0076	0.00092	1
Phenanthrene	0.00084	J	mg/kg	0.0076	0.00065	1
Anthracene	ND		mg/kg	0.0076	0.00061	1
Pyrene	0.0011	J	mg/kg	0.0076	0.00054	1
Benzo(a)anthracene	0.0015	J	mg/kg	0.0076	0.00073	1
Chrysene	0.00096	J	mg/kg	0.0076	0.00057	1
Benzo(b)fluoranthene	0.0032	J	mg/kg	0.0076	0.00073	1
Benzo(a)pyrene	0.0022	J	mg/kg	0.0076	0.00092	1
Benzo(ghi)perylene	0.0046	J	mg/kg	0.0076	0.00065	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	**131**	Q	23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	72		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-17 D
Client ID: PB-672-11-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 11:40
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/04/21 19:22
Analyst: DV
Percent Solids: 81%

Extraction Method: EPA 3546
Extraction Date: 06/02/21 00:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		mg/kg	0.016	0.0029	2
Fluorene	ND		mg/kg	0.016	0.0020	2
Phenanthrene	0.0039	J	mg/kg	0.016	0.0014	2
Anthracene	ND		mg/kg	0.016	0.0013	2
Pyrene	0.0076	J	mg/kg	0.016	0.0011	2
Benzo(a)anthracene	0.0061	J	mg/kg	0.016	0.0016	2
Chrysene	0.0048	J	mg/kg	0.016	0.0012	2
Benzo(b)fluoranthene	0.0069	J	mg/kg	0.016	0.0016	2
Benzo(a)pyrene	0.0054	J	mg/kg	0.016	0.0020	2
Benzo(ghi)perylene	0.0031	J	mg/kg	0.016	0.0014	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	94		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	64		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-18
Client ID: PB-672-12-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 11:55
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/03/21 17:22
Analyst: DV
Percent Solids: 86%

Extraction Method: EPA 3546
Extraction Date: 06/02/21 00:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.044		mg/kg	0.0076	0.0014	1
Fluorene	0.059		mg/kg	0.0076	0.00092	1
Phenanthrene	0.34		mg/kg	0.0076	0.00065	1
Anthracene	0.080		mg/kg	0.0076	0.00061	1
Pyrene	0.33		mg/kg	0.0076	0.00053	1
Benzo(a)anthracene	0.24		mg/kg	0.0076	0.00072	1
Chrysene	0.18		mg/kg	0.0076	0.00057	1
Benzo(b)fluoranthene	0.28		mg/kg	0.0076	0.00072	1
Benzo(a)pyrene	0.22		mg/kg	0.0076	0.00092	1
Benzo(ghi)perylene	0.11		mg/kg	0.0076	0.00065	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	**132**	Q	23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	60		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-19 D
Client ID: PB-672-13-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 12:10
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/04/21 19:38
Analyst: DV
Percent Solids: 84%

Extraction Method: EPA 3546
Extraction Date: 06/02/21 00:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	8.1		mg/kg	0.15	0.028	20
Fluorene	0.73		mg/kg	0.15	0.018	20
Phenanthrene	0.58		mg/kg	0.15	0.013	20
Anthracene	0.14	J	mg/kg	0.15	0.012	20
Pyrene	0.62		mg/kg	0.15	0.011	20
Benzo(a)anthracene	0.47		mg/kg	0.15	0.015	20
Chrysene	0.40		mg/kg	0.15	0.012	20
Benzo(b)fluoranthene	0.58		mg/kg	0.15	0.015	20
Benzo(a)pyrene	0.48		mg/kg	0.15	0.018	20
Benzo(ghi)perylene	0.27		mg/kg	0.15	0.013	20

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	**0**	Q	23-120
2-Fluorobiphenyl	**0**	Q	30-120
4-Terphenyl-d14	**0**	Q	18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-20 D
Client ID: PB-672-14-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 12:25
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/03/21 17:55
Analyst: DV
Percent Solids: 85%

Extraction Method: EPA 3546
Extraction Date: 06/02/21 00:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.028		mg/kg	0.015	0.0028	2
Fluorene	0.039		mg/kg	0.015	0.0018	2
Phenanthrene	0.22		mg/kg	0.015	0.0013	2
Anthracene	0.073		mg/kg	0.015	0.0012	2
Pyrene	0.30		mg/kg	0.015	0.0011	2
Benzo(a)anthracene	0.24		mg/kg	0.015	0.0015	2
Chrysene	0.16		mg/kg	0.015	0.0012	2
Benzo(b)fluoranthene	0.26		mg/kg	0.015	0.0015	2
Benzo(a)pyrene	0.24		mg/kg	0.015	0.0018	2
Benzo(ghi)perylene	0.12		mg/kg	0.015	0.0013	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	**131**	Q	23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	50		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-21
Client ID: PB-672-15-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 13:20
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/04/21 19:55
Analyst: DV
Percent Solids: 84%

Extraction Method: EPA 3546
Extraction Date: 06/01/21 23:51

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.0050	J	mg/kg	0.0079	0.0014	1
Fluorene	0.0020	J	mg/kg	0.0079	0.00095	1
Phenanthrene	0.026		mg/kg	0.0079	0.00067	1
Anthracene	0.0076	J	mg/kg	0.0079	0.00063	1
Pyrene	0.048		mg/kg	0.0079	0.00055	1
Benzo(a)anthracene	0.036		mg/kg	0.0079	0.00075	1
Chrysene	0.032		mg/kg	0.0079	0.00059	1
Benzo(b)fluoranthene	0.042		mg/kg	0.0079	0.00075	1
Benzo(a)pyrene	0.030		mg/kg	0.0079	0.00095	1
Benzo(ghi)perylene	0.015		mg/kg	0.0079	0.00067	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	98		23-120
2-Fluorobiphenyl	76		30-120
4-Terphenyl-d14	71		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-22
Client ID: PB-672-16-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 13:30
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/03/21 19:28
Analyst: DV
Percent Solids: 84%

Extraction Method: EPA 3546
Extraction Date: 06/01/21 23:51

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.0019	J	mg/kg	0.0078	0.0014	1
Fluorene	ND		mg/kg	0.0078	0.00093	1
Phenanthrene	0.0035	J	mg/kg	0.0078	0.00066	1
Anthracene	0.00082	J	mg/kg	0.0078	0.00062	1
Pyrene	0.0055	J	mg/kg	0.0078	0.00054	1
Benzo(a)anthracene	0.0045	J	mg/kg	0.0078	0.00074	1
Chrysene	0.0036	J	mg/kg	0.0078	0.00058	1
Benzo(b)fluoranthene	0.0043	J	mg/kg	0.0078	0.00074	1
Benzo(a)pyrene	0.0029	J	mg/kg	0.0078	0.00093	1
Benzo(ghi)perylene	0.0020	J	mg/kg	0.0078	0.00066	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	99		23-120
2-Fluorobiphenyl	98		30-120
4-Terphenyl-d14	104		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-23
Client ID: PB-672-17-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 13:40
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/03/21 19:45
Analyst: DV
Percent Solids: 80%

Extraction Method: EPA 3546
Extraction Date: 06/01/21 23:51

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.011		mg/kg	0.0081	0.0015	1
Fluorene	0.011		mg/kg	0.0081	0.00097	1
Phenanthrene	0.12		mg/kg	0.0081	0.00069	1
Anthracene	0.028		mg/kg	0.0081	0.00065	1
Pyrene	0.18		mg/kg	0.0081	0.00057	1
Benzo(a)anthracene	0.11		mg/kg	0.0081	0.00077	1
Chrysene	0.088		mg/kg	0.0081	0.00061	1
Benzo(b)fluoranthene	0.11		mg/kg	0.0081	0.00077	1
Benzo(a)pyrene	0.086		mg/kg	0.0081	0.00097	1
Benzo(ghi)perylene	0.054		mg/kg	0.0081	0.00069	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	69		23-120
2-Fluorobiphenyl	67		30-120
4-Terphenyl-d14	70		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-24
Client ID: PB-672-18-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 13:50
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/03/21 20:01
Analyst: DV
Percent Solids: 78%

Extraction Method: EPA 3546
Extraction Date: 06/01/21 23:51

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.050		mg/kg	0.0083	0.0015	1
Fluorene	0.0039	J	mg/kg	0.0083	0.0010	1
Phenanthrene	0.041		mg/kg	0.0083	0.00070	1
Anthracene	0.013		mg/kg	0.0083	0.00066	1
Pyrene	0.086		mg/kg	0.0083	0.00058	1
Benzo(a)anthracene	0.069		mg/kg	0.0083	0.00079	1
Chrysene	0.057		mg/kg	0.0083	0.00062	1
Benzo(b)fluoranthene	0.068		mg/kg	0.0083	0.00079	1
Benzo(a)pyrene	0.056		mg/kg	0.0083	0.0010	1
Benzo(ghi)perylene	0.036		mg/kg	0.0083	0.00070	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	85		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	61		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-25
Client ID: PB-672-19-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 13:55
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/03/21 20:18
Analyst: DV
Percent Solids: 83%

Extraction Method: EPA 3546
Extraction Date: 06/01/21 23:51

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.0017	J	mg/kg	0.0080	0.0014	1
Fluorene	ND		mg/kg	0.0080	0.00096	1
Phenanthrene	0.0049	J	mg/kg	0.0080	0.00068	1
Anthracene	0.0010	J	mg/kg	0.0080	0.00064	1
Pyrene	0.010		mg/kg	0.0080	0.00056	1
Benzo(a)anthracene	0.0069	J	mg/kg	0.0080	0.00076	1
Chrysene	0.0048	J	mg/kg	0.0080	0.00060	1
Benzo(b)fluoranthene	0.0068	J	mg/kg	0.0080	0.00076	1
Benzo(a)pyrene	0.0053	J	mg/kg	0.0080	0.00096	1
Benzo(ghi)perylene	0.0038	J	mg/kg	0.0080	0.00068	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	98		23-120
2-Fluorobiphenyl	91		30-120
4-Terphenyl-d14	92		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-26 D
Client ID: PB-672-20-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 14:10
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/05/21 15:42
Analyst: JJW
Percent Solids: 84%

Extraction Method: EPA 3546
Extraction Date: 06/01/21 23:51

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.15	J	mg/kg	0.16	0.029	20
Fluorene	0.66		mg/kg	0.16	0.019	20
Phenanthrene	6.7		mg/kg	0.16	0.014	20
Anthracene	2.5		mg/kg	0.16	0.013	20
Pyrene	8.8		mg/kg	0.16	0.011	20
Benzo(a)anthracene	7.0		mg/kg	0.16	0.015	20
Chrysene	5.1		mg/kg	0.16	0.012	20
Benzo(b)fluoranthene	6.0		mg/kg	0.16	0.015	20
Benzo(a)pyrene	4.6		mg/kg	0.16	0.019	20
Benzo(ghi)perylene	1.9		mg/kg	0.16	0.014	20

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	**0**	Q	23-120
2-Fluorobiphenyl	**0**	Q	30-120
4-Terphenyl-d14	**0**	Q	18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-27
Client ID: PB-672-21-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 14:15
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/04/21 20:11
Analyst: DV
Percent Solids: 86%

Extraction Method: EPA 3546
Extraction Date: 06/01/21 23:51

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.0069	J	mg/kg	0.0077	0.0014	1
Fluorene	0.0042	J	mg/kg	0.0077	0.00092	1
Phenanthrene	0.020		mg/kg	0.0077	0.00066	1
Anthracene	0.0044	J	mg/kg	0.0077	0.00062	1
Pyrene	0.030		mg/kg	0.0077	0.00054	1
Benzo(a)anthracene	0.020		mg/kg	0.0077	0.00073	1
Chrysene	0.019		mg/kg	0.0077	0.00058	1
Benzo(b)fluoranthene	0.024		mg/kg	0.0077	0.00073	1
Benzo(a)pyrene	0.022		mg/kg	0.0077	0.00092	1
Benzo(ghi)perylene	0.017		mg/kg	0.0077	0.00066	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	85		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	60		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-28 D
Client ID: PB-672-22-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 14:30
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/03/21 21:07
Analyst: DV
Percent Solids: 82%

Extraction Method: EPA 3546
Extraction Date: 06/01/21 23:51

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.17		mg/kg	0.040	0.0073	5
Fluorene	0.050		mg/kg	0.040	0.0048	5
Phenanthrene	0.87		mg/kg	0.040	0.0034	5
Anthracene	0.23		mg/kg	0.040	0.0032	5
Pyrene	2.0		mg/kg	0.040	0.0028	5
Benzo(a)anthracene	1.5		mg/kg	0.040	0.0038	5
Chrysene	1.2		mg/kg	0.040	0.0030	5
Benzo(b)fluoranthene	1.5		mg/kg	0.040	0.0038	5
Benzo(a)pyrene	1.3		mg/kg	0.040	0.0048	5
Benzo(ghi)perylene	1.0		mg/kg	0.040	0.0034	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	63		23-120
2-Fluorobiphenyl	62		30-120
4-Terphenyl-d14	61		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-30
Client ID: FB-210520-1
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 14:40
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 05/27/21 21:50
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 05/26/21 19:46

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	97		23-120
2-Fluorobiphenyl	85		15-120
4-Terphenyl-d14	95		41-149

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-31
Client ID: FB-210520-2
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 14:45
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 05/27/21 22:09
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 05/26/21 20:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	89		23-120
2-Fluorobiphenyl	77		15-120
4-Terphenyl-d14	86		41-149

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-32
Client ID: FB-210520-3
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 15:00
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 05/28/21 17:58
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 05/27/21 18:07

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	80		15-120
4-Terphenyl-d14	88		41-149

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-33
Client ID: DUP-02
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 08:00
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/04/21 20:28
Analyst: DV
Percent Solids: 75%

Extraction Method: EPA 3546
Extraction Date: 06/01/21 23:51

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.0055	J	mg/kg	0.0088	0.0016	1
Fluorene	0.0066	J	mg/kg	0.0088	0.0010	1
Phenanthrene	0.15		mg/kg	0.0088	0.00075	1
Anthracene	0.034		mg/kg	0.0088	0.00070	1
Pyrene	0.22		mg/kg	0.0088	0.00062	1
Benzo(a)anthracene	0.15		mg/kg	0.0088	0.00084	1
Chrysene	0.11		mg/kg	0.0088	0.00066	1
Benzo(b)fluoranthene	0.14		mg/kg	0.0088	0.00084	1
Benzo(a)pyrene	0.11		mg/kg	0.0088	0.0010	1
Benzo(ghi)perylene	0.062		mg/kg	0.0088	0.00075	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	94		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	56		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126821
Report Date: 06/08/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 05/27/21 21:12
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 05/26/21 19:46

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 30-32 Batch: WG1504177-1					
Naphthalene	ND		ug/l	0.10	0.05
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	ND		ug/l	0.05	0.02
Anthracene	ND		ug/l	0.10	0.01
Pyrene	0.02	J	ug/l	0.10	0.02
Benzo(a)anthracene	ND		ug/l	0.05	0.02
Chrysene	ND		ug/l	0.10	0.01
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Benzo(ghi)perylene	ND		ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	68		21-120
Phenol-d6	62		10-120
Nitrobenzene-d5	106		23-120
2-Fluorobiphenyl	93		15-120
2,4,6-Tribromophenol	70		10-120
4-Terphenyl-d14	105		41-149

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126821
Report Date: 06/08/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 06/03/21 10:56
Analyst: RP

Extraction Method: EPA 3546
Extraction Date: 06/01/21 23:49

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01-20 Batch: WG1506297-1					
Naphthalene	ND		mg/kg	0.0065	0.0012
Fluorene	ND		mg/kg	0.0065	0.00078
Phenanthrene	ND		mg/kg	0.0065	0.00056
Anthracene	ND		mg/kg	0.0065	0.00052
Pyrene	ND		mg/kg	0.0065	0.00046
Benzo(a)anthracene	ND		mg/kg	0.0065	0.00062
Chrysene	ND		mg/kg	0.0065	0.00049
Benzo(b)fluoranthene	ND		mg/kg	0.0065	0.00062
Benzo(a)pyrene	ND		mg/kg	0.0065	0.00078
Benzo(ghi)perylene	ND		mg/kg	0.0065	0.00056

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	85		25-120
Phenol-d6	91		10-120
Nitrobenzene-d5	98		23-120
2-Fluorobiphenyl	81		30-120
2,4,6-Tribromophenol	90		10-136
4-Terphenyl-d14	81		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126821
Report Date: 06/08/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 06/03/21 18:56
Analyst: DV

Extraction Method: EPA 3546
Extraction Date: 06/01/21 23:51

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 21-28,33 Batch: WG1506298-1					
Naphthalene	ND		mg/kg	0.0066	0.0012
Fluorene	ND		mg/kg	0.0066	0.00079
Phenanthrene	ND		mg/kg	0.0066	0.00056
Anthracene	ND		mg/kg	0.0066	0.00052
Pyrene	ND		mg/kg	0.0066	0.00046
Benzo(a)anthracene	ND		mg/kg	0.0066	0.00062
Chrysene	ND		mg/kg	0.0066	0.00049
Benzo(b)fluoranthene	ND		mg/kg	0.0066	0.00062
Benzo(a)pyrene	ND		mg/kg	0.0066	0.00079
Benzo(ghi)perylene	ND		mg/kg	0.0066	0.00056

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	95		25-120
Phenol-d6	92		10-120
Nitrobenzene-d5	96		23-120
2-Fluorobiphenyl	92		30-120
2,4,6-Tribromophenol	109		10-136
4-Terphenyl-d14	102		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126821

Report Date: 06/08/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 30-32 Batch: WG1504177-2 WG1504177-3								
Naphthalene	77		77		40-140	0		40
Fluorene	82		81		40-140	1		40
Phenanthrene	84		83		40-140	1		40
Anthracene	85		85		40-140	0		40
Pyrene	84		81		26-127	4		40
Benzo(a)anthracene	86		82		40-140	5		40
Chrysene	84		84		40-140	0		40
Benzo(b)fluoranthene	90		85		40-140	6		40
Benzo(a)pyrene	90		87		40-140	3		40
Benzo(ghi)perylene	87		85		40-140	2		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	73		75		21-120
Phenol-d6	60		60		10-120
Nitrobenzene-d5	93		94		23-120
2-Fluorobiphenyl	80		80		15-120
2,4,6-Tribromophenol	82		83		10-120
4-Terphenyl-d14	89		87		41-149

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126821

Report Date: 06/08/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01-20 Batch: WG1506297-2 WG1506297-3								
Naphthalene	81		88		40-140	8		50
Fluorene	82		89		40-140	8		50
Phenanthrene	82		89		40-140	8		50
Anthracene	88		94		40-140	7		50
Pyrene	84		92		35-142	9		50
Benzo(a)anthracene	89		96		40-140	8		50
Chrysene	80		88		40-140	10		50
Benzo(b)fluoranthene	90		103		40-140	13		50
Benzo(a)pyrene	93		99		40-140	6		50
Benzo(ghi)perylene	88		94		40-140	7		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	86		92		25-120
Phenol-d6	92		99		10-120
Nitrobenzene-d5	101		108		23-120
2-Fluorobiphenyl	81		86		30-120
2,4,6-Tribromophenol	92		101		10-136
4-Terphenyl-d14	79		86		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126821

Report Date: 06/08/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 21-28,33 Batch: WG1506298-2 WG1506298-3								
Naphthalene	93		82		40-140	13		50
Fluorene	106		92		40-140	14		50
Phenanthrene	103		92		40-140	11		50
Anthracene	109		98		40-140	11		50
Pyrene	113		99		35-142	13		50
Benzo(a)anthracene	109		101		40-140	8		50
Chrysene	103		89		40-140	15		50
Benzo(b)fluoranthene	114		100		40-140	13		50
Benzo(a)pyrene	114		101		40-140	12		50
Benzo(ghi)perylene	108		98		40-140	10		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	85		88		25-120
Phenol-d6	84		86		10-120
Nitrobenzene-d5	89		90		23-120
2-Fluorobiphenyl	98		86		30-120
2,4,6-Tribromophenol	116		103		10-136
4-Terphenyl-d14	106		95		18-120

METALS

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-01
Client ID: PB-663-08-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/20/21 08:00
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	28.7		mg/kg	2.13	0.114	1	05/30/21 11:45	06/01/21 20:31	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-02
Client ID: PB-663-09-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/20/21 08:10
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2010		mg/kg	2.16	0.116	1	05/30/21 11:45	06/01/21 20:21	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-03
Client ID: PB-663-10-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/20/21 08:18
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3420		mg/kg	2.27	0.122	1	05/30/21 11:45	06/01/21 20:26	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-04
Client ID: PB-663-12-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/20/21 08:30
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 66%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2430		mg/kg	2.97	0.159	1	05/30/21 11:45	06/01/21 21:06	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-05
Client ID: PB-663-13-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/20/21 08:40
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	73.6		mg/kg	2.27	0.122	1	05/30/21 11:45	06/01/21 21:11	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-06
Client ID: PB-663-14-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/20/21 08:55
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 70%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	34.4		mg/kg	2.74	0.147	1	05/30/21 11:45	06/01/21 21:16	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-07
Client ID: PB-672-01-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/20/21 09:45
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	52.1		mg/kg	2.28	0.122	1	05/30/21 11:45	06/01/21 21:21	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-08 Date Collected: 05/20/21 09:55

Client ID: PB-672-02-SS01 Date Received: 05/20/21

Sample Location: PHILADELPHIA, PA Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	16.8		mg/kg	2.26	0.121	1	05/30/21 11:45	06/01/21 21:26	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-09
Client ID: PB-672-03-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/20/21 10:05
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	23.4		mg/kg	2.31	0.124	1	05/30/21 11:45	06/01/21 21:31	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-10 Date Collected: 05/20/21 10:10

Client ID: PB-672-04-SS01 Date Received: 05/20/21

Sample Location: PHILADELPHIA, PA Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	12.1		mg/kg	2.21	0.118	1	05/30/21 11:45	06/01/21 21:36	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-11
Client ID: PB-672-05-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/20/21 10:20
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	14.4		mg/kg	2.30	0.123	1	05/30/21 11:45	06/01/21 21:41	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-12
Client ID: PB-672-06-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/20/21 10:40
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	16.6		mg/kg	2.23	0.120	1	05/30/21 11:45	06/01/21 21:47	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-13
Client ID: PB-672-07-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/20/21 10:45
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	20.4		mg/kg	2.24	0.120	1	05/30/21 11:45	06/01/21 21:52	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-14 Date Collected: 05/20/21 11:00

Client ID: PB-672-08-SS01 Date Received: 05/20/21

Sample Location: PHILADELPHIA, PA Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	22.8		mg/kg	2.33	0.125	1	05/30/21 11:45	06/01/21 22:07	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-15 Date Collected: 05/20/21 11:15

Client ID: PB-672-09-SS01 Date Received: 05/20/21

Sample Location: PHILADELPHIA, PA Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	24.5		mg/kg	2.22	0.119	1	05/30/21 11:45	06/01/21 22:11	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-16
Client ID: PB-672-10-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/20/21 11:25
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	20.7		mg/kg	2.26	0.121	1	05/30/21 11:45	06/01/21 22:17	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-17
Client ID: PB-672-11-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/20/21 11:40
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	16.2		mg/kg	2.35	0.126	1	05/30/21 11:45	06/01/21 22:22	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-18 Date Collected: 05/20/21 11:55

Client ID: PB-672-12-SS01 Date Received: 05/20/21

Sample Location: PHILADELPHIA, PA Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	133		mg/kg	2.28	0.122	1	05/30/21 11:45	06/01/21 22:27	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-19
Client ID: PB-672-13-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/20/21 12:10
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	14.2		mg/kg	2.30	0.123	1	05/30/21 11:45	06/01/21 22:32	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-20 Date Collected: 05/20/21 12:25

Client ID: PB-672-14-SS01 Date Received: 05/20/21

Sample Location: PHILADELPHIA, PA Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	128		mg/kg	2.29	0.122	1	05/30/21 11:45	06/01/21 22:37	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-21
Client ID: PB-672-15-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/20/21 13:20
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	18.1		mg/kg	2.31	0.124	1	05/29/21 11:00	06/01/21 12:40	EPA 3050B	1,6010D	GD

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-22
Client ID: PB-672-16-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/20/21 13:30
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	34.5		mg/kg	2.29	0.123	1	05/29/21 11:00	06/01/21 12:45	EPA 3050B	1,6010D	GD

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-23
Client ID: PB-672-17-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/20/21 13:40
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	80.6		mg/kg	2.41	0.129	1	05/29/21 11:00	06/01/21 12:50	EPA 3050B	1,6010D	GD

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-24
Client ID: PB-672-18-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/20/21 13:50
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 78%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	21.3		mg/kg	2.42	0.130	1	05/29/21 11:00	06/01/21 12:55	EPA 3050B	1,6010D	GD

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-25
Client ID: PB-672-19-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/20/21 13:55
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	21.1		mg/kg	2.27	0.122	1	05/29/21 11:00	06/01/21 13:00	EPA 3050B	1,6010D	GD

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-26
Client ID: PB-672-20-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/20/21 14:10
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	45.4		mg/kg	2.28	0.122	1	05/29/21 11:00	06/01/21 13:05	EPA 3050B	1,6010D	GD

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-27
Client ID: PB-672-21-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/20/21 14:15
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	15.2		mg/kg	2.20	0.118	1	05/29/21 11:00	06/01/21 13:11	EPA 3050B	1,6010D	GD

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-28 Date Collected: 05/20/21 14:30

Client ID: PB-672-22-SS01 Date Received: 05/20/21

Sample Location: PHILADELPHIA, PA Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	292		mg/kg	2.37	0.127	1	05/29/21 11:00	06/01/21 13:16	EPA 3050B	1,6010D	GD

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-30
Client ID: FB-210520-1
Sample Location: PHILADELPHIA, PA
Date Collected: 05/20/21 14:40
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	05/24/21 16:22	06/07/21 17:13	EPA 3005A	1,6020B	CD

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-31
Client ID: FB-210520-2
Sample Location: PHILADELPHIA, PA
Date Collected: 05/20/21 14:45
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	05/24/21 16:22	06/07/21 17:18	EPA 3005A	1,6020B	CD

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-32
Client ID: FB-210520-3
Sample Location: PHILADELPHIA, PA
Date Collected: 05/20/21 15:00
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	05/24/21 16:22	06/07/21 17:23	EPA 3005A	1,6020B	CD

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126821
Project Number: 200.00135.005
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-33
Client ID: DUP-02
Sample Location: PHILADELPHIA, PA
Date Collected: 05/20/21 08:00
Date Received: 05/20/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 75%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	54.9		mg/kg	2.63	0.141	1	05/29/21 11:00	06/01/21 13:21	EPA 3050B	1,6010D	GD

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126821

Project Number: 200.00135.005 **Report Date:** 06/08/21

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 30-32 Batch: WG1502834-1										
Lead, Total	ND		ug/l	1.000	0.3430	1	05/24/21 16:22	05/26/21 20:46	1,6020B	BM

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-20 Batch: WG1505049-1										
Lead, Total	ND		mg/kg	2.00	0.107	1	05/30/21 11:45	06/01/21 20:07	1,6010D	SV

Prep Information

Digestion Method: EPA 3050B

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 21-28,33 Batch: WG1505050-1										
Lead, Total	ND		mg/kg	2.00	0.107	1	05/29/21 11:00	06/01/21 08:44	1,6010D	GD

Prep Information

Digestion Method: EPA 3050B

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126821

Report Date: 06/08/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 30-32 Batch: WG1502834-2								
Lead, Total	106		-		80-120	-		
Total Metals - Mansfield Lab Associated sample(s): 01-20 Batch: WG1505049-2 SRM Lot Number: D109-540								
Lead, Total	88		-		72-128	-		
Total Metals - Mansfield Lab Associated sample(s): 21-28,33 Batch: WG1505050-2 SRM Lot Number: D109-540								
Lead, Total	103		-		72-128	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005

Lab Number: L2126821
Report Date: 06/08/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 30-32 QC Batch ID: WG1502834-3 QC Sample: L2126825-11 Client ID: MS Sample												
Lead, Total	ND	510	531.0	104		-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG1505049-3 QC Sample: L2126821-01 Client ID: PB-663-08-SS01												
Lead, Total	28.7	43.4	67.1	88		-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 21-28,33 QC Batch ID: WG1505050-3 QC Sample: L2125274-01 Client ID: MS Sample												
Lead, Total	34.3	64.8	88.6	84		-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005

Lab Number: L2126821
Report Date: 06/08/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 30-32 QC Batch ID: WG1502834-4 QC Sample: L2126825-11 Client ID: DUP Sample						
Lead, Total	ND	ND	ug/l	NC		20
Total Metals - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG1505049-4 QC Sample: L2126821-01 Client ID: PB-663-08-SS01						
Lead, Total	28.7	27.5	mg/kg	4		20
Total Metals - Mansfield Lab Associated sample(s): 21-28,33 QC Batch ID: WG1505050-4 QC Sample: L2125274-01 Client ID: DUP Sample						
Lead, Total	34.3	39.2	mg/kg	13		20

INORGANICS
&
MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126821
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-01
Client ID: PB-663-08-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/20/21 08:00
Date Received: 05/20/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	91.1		%	0.100	NA	1	-	05/22/21 09:33	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126821
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-02
Client ID: PB-663-09-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/20/21 08:10
Date Received: 05/20/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	90.7		%	0.100	NA	1	-	05/22/21 09:33	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126821
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-03
Client ID: PB-663-10-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/20/21 08:18
Date Received: 05/20/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.4		%	0.100	NA	1	-	05/22/21 09:33	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126821
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-04
Client ID: PB-663-12-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 05/20/21 08:30
Date Received: 05/20/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	66.2		%	0.100	NA	1	-	05/22/21 09:33	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126821
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-05
Client ID: PB-663-13-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 05/20/21 08:40
Date Received: 05/20/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.4		%	0.100	NA	1	-	05/22/21 09:33	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126821
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-06
Client ID: PB-663-14-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/20/21 08:55
Date Received: 05/20/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	69.7		%	0.100	NA	1	-	05/22/21 09:33	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126821
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-07
Client ID: PB-672-01-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/20/21 09:45
Date Received: 05/20/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.9		%	0.100	NA	1	-	05/22/21 09:33	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126821
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-08
Client ID: PB-672-02-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/20/21 09:55
Date Received: 05/20/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.0		%	0.100	NA	1	-	05/22/21 09:33	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126821
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-09
Client ID: PB-672-03-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/20/21 10:05
Date Received: 05/20/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.1		%	0.100	NA	1	-	05/22/21 09:33	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126821
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-10
Client ID: PB-672-04-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/20/21 10:10
Date Received: 05/20/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.7		%	0.100	NA	1	-	05/22/21 09:33	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126821
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-11
Client ID: PB-672-05-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/20/21 10:20
Date Received: 05/20/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.1		%	0.100	NA	1	-	05/22/21 09:33	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126821
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-12
Client ID: PB-672-06-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/20/21 10:40
Date Received: 05/20/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.1		%	0.100	NA	1	-	05/22/21 09:33	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126821
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-13
Client ID: PB-672-07-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/20/21 10:45
Date Received: 05/20/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.0		%	0.100	NA	1	-	05/22/21 09:33	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126821
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-14
Client ID: PB-672-08-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/20/21 11:00
Date Received: 05/20/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.7		%	0.100	NA	1	-	05/22/21 09:33	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126821
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-15
Client ID: PB-672-09-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/20/21 11:15
Date Received: 05/20/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.4		%	0.100	NA	1	-	05/22/21 09:33	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126821
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-16
Client ID: PB-672-10-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/20/21 11:25
Date Received: 05/20/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.2		%	0.100	NA	1	-	05/22/21 09:33	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126821
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-17
Client ID: PB-672-11-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/20/21 11:40
Date Received: 05/20/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.4		%	0.100	NA	1	-	05/22/21 09:33	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126821
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-18
Client ID: PB-672-12-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/20/21 11:55
Date Received: 05/20/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.5		%	0.100	NA	1	-	05/22/21 09:33	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126821
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-19
Client ID: PB-672-13-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/20/21 12:10
Date Received: 05/20/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.2		%	0.100	NA	1	-	05/22/21 09:33	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126821
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-20
Client ID: PB-672-14-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/20/21 12:25
Date Received: 05/20/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.9		%	0.100	NA	1	-	05/22/21 09:33	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126821
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-21
Client ID: PB-672-15-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 05/20/21 13:20
Date Received: 05/20/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.6		%	0.100	NA	1	-	05/22/21 11:28	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126821
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-22
Client ID: PB-672-16-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/20/21 13:30
Date Received: 05/20/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.2		%	0.100	NA	1	-	05/22/21 11:28	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126821
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-23
Client ID: PB-672-17-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/20/21 13:40
Date Received: 05/20/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.4		%	0.100	NA	1	-	05/22/21 11:28	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126821
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-24
Client ID: PB-672-18-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/20/21 13:50
Date Received: 05/20/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	78.4		%	0.100	NA	1	-	05/22/21 11:28	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126821
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-25
Client ID: PB-672-19-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/20/21 13:55
Date Received: 05/20/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.6		%	0.100	NA	1	-	05/22/21 11:28	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126821
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-26
Client ID: PB-672-20-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/20/21 14:10
Date Received: 05/20/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.6		%	0.100	NA	1	-	05/22/21 11:28	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126821
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-27
Client ID: PB-672-21-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/20/21 14:15
Date Received: 05/20/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.6		%	0.100	NA	1	-	05/22/21 11:28	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126821
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-28
Client ID: PB-672-22-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/20/21 14:30
Date Received: 05/20/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.6		%	0.100	NA	1	-	05/22/21 11:28	121,2540G	RI

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126821
Report Date: 06/08/21

SAMPLE RESULTS

Lab ID: L2126821-33
Client ID: DUP-02
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/20/21 08:00
Date Received: 05/20/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	75.3		%	0.100	NA	1	-	05/22/21 11:28	121,2540G	RI

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126821

Report Date: 06/08/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-20 QC Batch ID: WG1502360-1 QC Sample: L2126821-01 Client ID: PB-663-08-SS01						
Solids, Total	91.1	91.7	%	1		20
General Chemistry - Westborough Lab Associated sample(s): 21-28,33 QC Batch ID: WG1502376-1 QC Sample: L2127149-24 Client ID: DUP Sample						
Solids, Total	86.0	85.5	%	1		20

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005

Lab Number: L2126821
Report Date: 06/08/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent
C	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2126821-01A	Vial MeOH preserved	B	NA		4.3	Y	Absent		PA-8260HLW(14)
L2126821-01B	Vial water preserved	B	NA		4.3	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-01C	Vial water preserved	B	NA		4.3	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-01D	Plastic 120ml unpreserved	B	NA		4.3	Y	Absent		TS(7)
L2126821-01E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.3	Y	Absent		PB-TI(180)
L2126821-01F	Glass 120ml/4oz unpreserved	B	NA		4.3	Y	Absent		PA-8270SIM(14)
L2126821-02A	Vial MeOH preserved	B	NA		4.3	Y	Absent		PA-8260HLW(14)
L2126821-02B	Vial water preserved	B	NA		4.3	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-02C	Vial water preserved	B	NA		4.3	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-02D	Plastic 120ml unpreserved	B	NA		4.3	Y	Absent		TS(7)
L2126821-02E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.3	Y	Absent		PB-TI(180)
L2126821-02F	Glass 120ml/4oz unpreserved	B	NA		4.3	Y	Absent		PA-8270SIM(14)
L2126821-03A	Vial MeOH preserved	B	NA		4.3	Y	Absent		PA-8260HLW(14)
L2126821-03B	Vial water preserved	B	NA		4.3	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-03C	Vial water preserved	B	NA		4.3	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-03D	Plastic 120ml unpreserved	B	NA		4.3	Y	Absent		TS(7)
L2126821-03E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.3	Y	Absent		PB-TI(180)
L2126821-03F	Glass 120ml/4oz unpreserved	B	NA		4.3	Y	Absent		PA-8270SIM(14)
L2126821-04A	Vial MeOH preserved	B	NA		4.3	Y	Absent		PA-8260HLW(14)
L2126821-04B	Vial water preserved	B	NA		4.3	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-04C	Vial water preserved	B	NA		4.3	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)

*Values in parentheses indicate holding time in days

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005

Lab Number: L2126821
Report Date: 06/08/21

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2126821-04D	Plastic 120ml unpreserved	B	NA		4.3	Y	Absent		TS(7)
L2126821-04E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.3	Y	Absent		PB-TI(180)
L2126821-04F	Glass 120ml/4oz unpreserved	B	NA		4.3	Y	Absent		PA-8270SIM(14)
L2126821-05A	Vial MeOH preserved	B	NA		4.3	Y	Absent		PA-8260HLW(14)
L2126821-05B	Vial water preserved	B	NA		4.3	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-05C	Vial water preserved	B	NA		4.3	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-05D	Plastic 120ml unpreserved	B	NA		4.3	Y	Absent		TS(7)
L2126821-05E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.3	Y	Absent		PB-TI(180)
L2126821-05F	Glass 120ml/4oz unpreserved	B	NA		4.3	Y	Absent		PA-8270SIM(14)
L2126821-06A	Vial MeOH preserved	B	NA		4.3	Y	Absent		PA-8260HLW(14)
L2126821-06B	Vial water preserved	B	NA		4.3	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-06C	Vial water preserved	B	NA		4.3	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-06D	Plastic 120ml unpreserved	B	NA		4.3	Y	Absent		TS(7)
L2126821-06E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.3	Y	Absent		PB-TI(180)
L2126821-06F	Glass 120ml/4oz unpreserved	B	NA		4.3	Y	Absent		PA-8270SIM(14)
L2126821-07A	Vial MeOH preserved	B	NA		4.3	Y	Absent		PA-8260HLW(14)
L2126821-07B	Vial water preserved	B	NA		4.3	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-07C	Vial water preserved	B	NA		4.3	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-07D	Plastic 120ml unpreserved	B	NA		4.3	Y	Absent		TS(7)
L2126821-07E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.3	Y	Absent		PB-TI(180)
L2126821-07F	Glass 120ml/4oz unpreserved	B	NA		4.3	Y	Absent		PA-8270SIM(14)
L2126821-08A	Vial MeOH preserved	B	NA		4.3	Y	Absent		PA-8260HLW(14)
L2126821-08B	Vial water preserved	B	NA		4.3	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-08C	Vial water preserved	B	NA		4.3	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-08D	Plastic 120ml unpreserved	B	NA		4.3	Y	Absent		TS(7)
L2126821-08E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.3	Y	Absent		PB-TI(180)
L2126821-08F	Glass 120ml/4oz unpreserved	B	NA		4.3	Y	Absent		PA-8270SIM(14)
L2126821-09A	Vial MeOH preserved	A	NA		2.9	Y	Absent		PA-8260HLW(14)

*Values in parentheses indicate holding time in days

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005

Lab Number: L2126821
Report Date: 06/08/21

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2126821-09B	Vial water preserved	A	NA		2.9	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-09C	Vial water preserved	A	NA		2.9	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-09D	Plastic 120ml unpreserved	A	NA		2.9	Y	Absent		TS(7)
L2126821-09E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.9	Y	Absent		PB-TI(180)
L2126821-09F	Glass 120ml/4oz unpreserved	A	NA		2.9	Y	Absent		PA-8270SIM(14)
L2126821-10A	Vial MeOH preserved	A	NA		2.9	Y	Absent		PA-8260HLW(14)
L2126821-10B	Vial water preserved	A	NA		2.9	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-10C	Vial water preserved	A	NA		2.9	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-10D	Plastic 120ml unpreserved	A	NA		2.9	Y	Absent		TS(7)
L2126821-10E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.9	Y	Absent		PB-TI(180)
L2126821-10F	Glass 120ml/4oz unpreserved	A	NA		2.9	Y	Absent		PA-8270SIM(14)
L2126821-11A	Vial MeOH preserved	A	NA		2.9	Y	Absent		PA-8260HLW(14)
L2126821-11B	Vial water preserved	A	NA		2.9	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-11C	Vial water preserved	A	NA		2.9	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-11D	Plastic 120ml unpreserved	A	NA		2.9	Y	Absent		TS(7)
L2126821-11E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.9	Y	Absent		PB-TI(180)
L2126821-11F	Glass 120ml/4oz unpreserved	A	NA		2.9	Y	Absent		PA-8270SIM(14)
L2126821-12A	Vial MeOH preserved	A	NA		2.9	Y	Absent		PA-8260HLW(14)
L2126821-12B	Vial water preserved	A	NA		2.9	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-12C	Vial water preserved	A	NA		2.9	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-12D	Plastic 120ml unpreserved	A	NA		2.9	Y	Absent		TS(7)
L2126821-12E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.9	Y	Absent		PB-TI(180)
L2126821-12F	Glass 120ml/4oz unpreserved	A	NA		2.9	Y	Absent		PA-8270SIM(14)
L2126821-13A	Vial MeOH preserved	A	NA		2.9	Y	Absent		PA-8260HLW(14)
L2126821-13B	Vial water preserved	A	NA		2.9	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-13C	Vial water preserved	A	NA		2.9	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-13D	Plastic 120ml unpreserved	A	NA		2.9	Y	Absent		TS(7)
L2126821-13E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.9	Y	Absent		PB-TI(180)

*Values in parentheses indicate holding time in days

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005

Lab Number: L2126821
Report Date: 06/08/21

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2126821-13F	Glass 120ml/4oz unpreserved	A	NA		2.9	Y	Absent		PA-8270SIM(14)
L2126821-14A	Vial MeOH preserved	A	NA		2.9	Y	Absent		PA-8260HLW(14)
L2126821-14B	Vial water preserved	A	NA		2.9	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-14C	Vial water preserved	A	NA		2.9	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-14D	Plastic 120ml unpreserved	A	NA		2.9	Y	Absent		TS(7)
L2126821-14E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.9	Y	Absent		PB-TI(180)
L2126821-14F	Glass 120ml/4oz unpreserved	A	NA		2.9	Y	Absent		PA-8270SIM(14)
L2126821-15A	Vial MeOH preserved	A	NA		2.9	Y	Absent		PA-8260HLW(14)
L2126821-15B	Vial water preserved	A	NA		2.9	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-15C	Vial water preserved	A	NA		2.9	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-15D	Plastic 120ml unpreserved	A	NA		2.9	Y	Absent		TS(7)
L2126821-15E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.9	Y	Absent		PB-TI(180)
L2126821-15F	Glass 120ml/4oz unpreserved	A	NA		2.9	Y	Absent		PA-8270SIM(14)
L2126821-16A	Vial MeOH preserved	A	NA		2.9	Y	Absent		PA-8260HLW(14)
L2126821-16B	Vial water preserved	A	NA		2.9	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-16C	Vial water preserved	A	NA		2.9	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-16D	Plastic 120ml unpreserved	A	NA		2.9	Y	Absent		TS(7)
L2126821-16E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.9	Y	Absent		PB-TI(180)
L2126821-16F	Glass 120ml/4oz unpreserved	A	NA		2.9	Y	Absent		PA-8270SIM(14)
L2126821-17A	Vial MeOH preserved	A	NA		2.9	Y	Absent		PA-8260HLW(14)
L2126821-17B	Vial water preserved	A	NA		2.9	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-17C	Vial water preserved	A	NA		2.9	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-17D	Plastic 120ml unpreserved	A	NA		2.9	Y	Absent		TS(7)
L2126821-17E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.9	Y	Absent		PB-TI(180)
L2126821-17F	Glass 120ml/4oz unpreserved	A	NA		2.9	Y	Absent		PA-8270SIM(14)
L2126821-18A	Vial MeOH preserved	A	NA		2.9	Y	Absent		PA-8260HLW(14)
L2126821-18B	Vial water preserved	A	NA		2.9	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-18C	Vial water preserved	A	NA		2.9	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)

*Values in parentheses indicate holding time in days

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005

Lab Number: L2126821
Report Date: 06/08/21

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2126821-18D	Plastic 120ml unpreserved	A	NA		2.9	Y	Absent		TS(7)
L2126821-18E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.9	Y	Absent		PB-TI(180)
L2126821-18F	Glass 120ml/4oz unpreserved	A	NA		2.9	Y	Absent		PA-8270SIM(14)
L2126821-19A	Vial MeOH preserved	A	NA		2.9	Y	Absent		PA-8260HLW(14)
L2126821-19B	Vial water preserved	A	NA		2.9	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-19C	Vial water preserved	A	NA		2.9	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-19D	Plastic 120ml unpreserved	A	NA		2.9	Y	Absent		TS(7)
L2126821-19E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.9	Y	Absent		PB-TI(180)
L2126821-19F	Glass 120ml/4oz unpreserved	A	NA		2.9	Y	Absent		PA-8270SIM(14)
L2126821-20A	Vial MeOH preserved	A	NA		2.9	Y	Absent		PA-8260HLW(14)
L2126821-20B	Vial water preserved	A	NA		2.9	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-20C	Vial water preserved	A	NA		2.9	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-20D	Plastic 120ml unpreserved	A	NA		2.9	Y	Absent		TS(7)
L2126821-20E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.9	Y	Absent		PB-TI(180)
L2126821-20F	Glass 120ml/4oz unpreserved	A	NA		2.9	Y	Absent		PA-8270SIM(14)
L2126821-21A	Vial MeOH preserved	C	NA		2.5	Y	Absent		PA-8260HLW(14)
L2126821-21B	Vial water preserved	C	NA		2.5	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-21C	Vial water preserved	C	NA		2.5	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-21D	Plastic 120ml unpreserved	C	NA		2.5	Y	Absent		TS(7)
L2126821-21E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		2.5	Y	Absent		PB-TI(180)
L2126821-21F	Glass 120ml/4oz unpreserved	C	NA		2.5	Y	Absent		PA-8270SIM(14)
L2126821-22A	Vial MeOH preserved	C	NA		2.5	Y	Absent		PA-8260HLW(14)
L2126821-22B	Vial water preserved	C	NA		2.5	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-22C	Vial water preserved	C	NA		2.5	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-22D	Plastic 120ml unpreserved	C	NA		2.5	Y	Absent		TS(7)
L2126821-22E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		2.5	Y	Absent		PB-TI(180)
L2126821-22F	Glass 120ml/4oz unpreserved	C	NA		2.5	Y	Absent		PA-8270SIM(14)
L2126821-23A	Vial MeOH preserved	C	NA		2.5	Y	Absent		PA-8260HLW(14)

*Values in parentheses indicate holding time in days

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005

Lab Number: L2126821
Report Date: 06/08/21

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2126821-23B	Vial water preserved	C	NA		2.5	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-23C	Vial water preserved	C	NA		2.5	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-23D	Plastic 120ml unpreserved	C	NA		2.5	Y	Absent		TS(7)
L2126821-23E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		2.5	Y	Absent		PB-TI(180)
L2126821-23F	Glass 120ml/4oz unpreserved	C	NA		2.5	Y	Absent		PA-8270SIM(14)
L2126821-24A	Vial MeOH preserved	C	NA		2.5	Y	Absent		PA-8260HLW(14)
L2126821-24B	Vial water preserved	C	NA		2.5	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-24C	Vial water preserved	C	NA		2.5	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-24D	Plastic 120ml unpreserved	C	NA		2.5	Y	Absent		TS(7)
L2126821-24E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		2.5	Y	Absent		PB-TI(180)
L2126821-24F	Glass 120ml/4oz unpreserved	C	NA		2.5	Y	Absent		PA-8270SIM(14)
L2126821-25A	Vial MeOH preserved	C	NA		2.5	Y	Absent		PA-8260HLW(14)
L2126821-25B	Vial water preserved	C	NA		2.5	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-25C	Vial water preserved	C	NA		2.5	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-25D	Plastic 120ml unpreserved	C	NA		2.5	Y	Absent		TS(7)
L2126821-25E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		2.5	Y	Absent		PB-TI(180)
L2126821-25F	Glass 120ml/4oz unpreserved	C	NA		2.5	Y	Absent		PA-8270SIM(14)
L2126821-26A	Vial MeOH preserved	C	NA		2.5	Y	Absent		PA-8260HLW(14)
L2126821-26B	Vial water preserved	C	NA		2.5	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-26C	Vial water preserved	C	NA		2.5	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-26D	Plastic 120ml unpreserved	C	NA		2.5	Y	Absent		TS(7)
L2126821-26E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		2.5	Y	Absent		PB-TI(180)
L2126821-26F	Glass 120ml/4oz unpreserved	C	NA		2.5	Y	Absent		PA-8270SIM(14)
L2126821-27A	Vial MeOH preserved	C	NA		2.5	Y	Absent		PA-8260HLW(14)
L2126821-27B	Vial water preserved	C	NA		2.5	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-27C	Vial water preserved	C	NA		2.5	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-27D	Plastic 120ml unpreserved	C	NA		2.5	Y	Absent		TS(7)
L2126821-27E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		2.5	Y	Absent		PB-TI(180)

*Values in parentheses indicate holding time in days

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005

Lab Number: L2126821
Report Date: 06/08/21

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2126821-27F	Glass 120ml/4oz unpreserved	C	NA		2.5	Y	Absent		PA-8270SIM(14)
L2126821-28A	Vial MeOH preserved	C	NA		2.5	Y	Absent		PA-8260HLW(14)
L2126821-28B	Vial water preserved	C	NA		2.5	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-28C	Vial water preserved	C	NA		2.5	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-28D	Plastic 120ml unpreserved	C	NA		2.5	Y	Absent		TS(7)
L2126821-28E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		2.5	Y	Absent		PB-TI(180)
L2126821-28F	Glass 120ml/4oz unpreserved	C	NA		2.5	Y	Absent		PA-8270SIM(14)
L2126821-29A	Vial HCl preserved	A	NA		2.9	Y	Absent		PA-8260(14)
L2126821-29B	Vial HCl preserved	A	NA		2.9	Y	Absent		8011(14)
L2126821-30A	Vial HCl preserved	A	NA		2.9	Y	Absent		HOLD-8260(14)
L2126821-30B	Vial HCl preserved	A	NA		2.9	Y	Absent		HOLD-8260(14)
L2126821-30C	Vial HCl preserved	A	NA		2.9	Y	Absent		HOLD-8260(14)
L2126821-30D	Vial Na2S2O3 preserved	A	NA		2.9	Y	Absent		8011(14)
L2126821-30E	Vial Na2S2O3 preserved	A	NA		2.9	Y	Absent		8011(14)
L2126821-30F	Plastic 250ml HNO3 preserved	A	<2	<2	2.9	Y	Absent		PB-6020T-PPB(180)
L2126821-30G	Amber 250ml unpreserved	A	7	7	2.9	Y	Absent		PA-8270SIM-LVI(7)
L2126821-30H	Amber 250ml unpreserved	A	7	7	2.9	Y	Absent		PA-8270SIM-LVI(7)
L2126821-31A	Vial HCl preserved	C	NA		2.5	Y	Absent		PA-8260(14)
L2126821-31B	Vial HCl preserved	C	NA		2.5	Y	Absent		PA-8260(14)
L2126821-31C	Vial HCl preserved	C	NA		2.5	Y	Absent		PA-8260(14)
L2126821-31D	Vial Na2S2O3 preserved	C	NA		2.5	Y	Absent		8011(14)
L2126821-31E	Vial Na2S2O3 preserved	C	NA		2.5	Y	Absent		8011(14)
L2126821-31F	Plastic 250ml HNO3 preserved	C	<2	<2	2.5	Y	Absent		PB-6020T-PPB(180)
L2126821-31G	Amber 250ml unpreserved	C	7	7	2.5	Y	Absent		PA-8270SIM-LVI(7)
L2126821-31H	Amber 250ml unpreserved	C	7	7	2.5	Y	Absent		PA-8270SIM-LVI(7)
L2126821-32A	Vial HCl preserved	B	NA		4.3	Y	Absent		PA-8260(14)
L2126821-32B	Vial HCl preserved	B	NA		4.3	Y	Absent		PA-8260(14)
L2126821-32C	Vial HCl preserved	B	NA		4.3	Y	Absent		PA-8260(14)

*Values in parentheses indicate holding time in days

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005

Lab Number: L2126821
Report Date: 06/08/21

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2126821-32D	Vial Na2S2O3 preserved	B	NA		4.3	Y	Absent		8011(14)
L2126821-32E	Vial Na2S2O3 preserved	B	NA		4.3	Y	Absent		8011(14)
L2126821-32F	Plastic 250ml HNO3 preserved	B	<2	<2	4.3	Y	Absent		PB-6020T-PPB(180)
L2126821-32G	Amber 250ml unpreserved	B	7	7	4.3	Y	Absent		PA-8270SIM-LVI(7)
L2126821-32H	Amber 250ml unpreserved	B	7	7	4.3	Y	Absent		PA-8270SIM-LVI(7)
L2126821-33A	Vial MeOH preserved	B	NA		4.3	Y	Absent		PA-8260HLW(14)
L2126821-33B	Vial water preserved	B	NA		4.3	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-33C	Vial water preserved	B	NA		4.3	Y	Absent	22-MAY-21 02:50	PA-8260HLW(14)
L2126821-33D	Plastic 120ml unpreserved	B	NA		4.3	Y	Absent		TS(7)
L2126821-33E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.3	Y	Absent		PB-TI(180)
L2126821-33F	Glass 120ml/4oz unpreserved	B	NA		4.3	Y	Absent		PA-8270SIM(14)

*Values in parentheses indicate holding time in days

Project Name:	PHILADELPHIA REFINERY-AST CLOS	**Lab Number:**	L2126821
Project Number:	200.00135.005	**Report Date:**	06/08/21

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY-AST CLOS	**Lab Number:**	L2126821
Project Number:	200.00135.005	**Report Date:**	06/08/21

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. (Note: 'PFAS, Total (6)' is applicable to MassDEP DW compliance analysis only.). If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY-AST CLOS	**Lab Number:**	L2126821
Project Number:	200.00135.005	**Report Date:**	06/08/21

Data Qualifiers

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY-AST CLOS	**Lab Number:**	L2126821
Project Number:	200.00135.005	**Report Date:**	06/08/21

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

ALPHA

NEW JERSEY CHAIN OF CUSTODY

Westborough, MA 01581 — 8 Walkup Dr. — TEL: 508-898-9220 — FAX: 508-898-9193
Mansfield, MA 02048 — 320 Forbes Blvd — TEL: 508-822-9300 — FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 4 of

Date Rec'd in Lab: 5/21/21

ALPHA Job #: L2126821

Client Information
Client: Ransom Consulting
Address: 2127 Hamilton Ave
Phone: 215-901-4574
Fax:
Email: william.schmidt@ransom

Project Information
Project Name: Philadelphia Refinery - AST Closure
Project Location: Philadelphia, PA
Project #: 200.00135.005
(Use Project name as Project #)
Project Manager: William Schmidt
ALPHAQuote #:

Turn-Around Time
Standard ☑ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables
☐ NJ Full / Reduced
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☑ Other

Regulatory Requirement
☐ SRS Residential/Non Residential
☐ SRS Impact to Groundwater
☐ NJ Ground Water Quality Standards
☐ NJ IGW SPLP Leachate Criteria
☒ Other Email, ADEX

Billing Information
☑ Same as Client Info
PO #

Site Information
Is this site impacted by Petroleum? Yes ☑
Petroleum Product:

These samples have been previously analyzed by Alpha ☐

For EPH, selection is REQUIRED:
☐ Category 1
☐ Category 2

For VOC, selection is REQUIRED:
☐ 1,4-Dioxane
☐ 8011

Other project specific requirements/comments:
Report Only Project Specific Analyte List

Please specify Metals or TAL.
Pader Leaded/Unleaded Gasoline Short List, No 1-6 Fuel Oil Short List, Lead Only

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	PA-8270 SIM	Metals (Lead)	TS	PA-8260 HLM	Sample Specific Comments	Total Bottle
26821-01	PB-663-08-5501	5/20	0800	S	FS	✓	✓	✓	✓		6
-02	PB-663-09-5501		0810			✓	✓	✓	✓		6
-03	PB-663-10-5501		0818			✓	✓	✓	✓		6
-04	PB-663-12-5501		0830			✓	✓	✓	✓		6
-05	PB-663-13-5501		0840			✓	✓	✓	✓		6
-06	PB-663-14-5501		0855			✓	✓	✓	✓		6
-07	PB-672-01-5501		0945			✓	✓	✓	✓		6
-08	PB-672-02-5501		0955			✓	✓	✓	✓		6
-09	PB-672-03-5501		1005			✓	✓	✓	✓		6
-10	PB-672-04-5501		1010			✓	✓	✓	✓		6

Container Type: A A P V
Preservative: A A A F

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code:
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Relinquished By:	Date/Time	Received By:	Date/Time
	5/20/21 1545	AAL	5/20/21 1545
AAL	5/20/21 2300		5/20/21 2300
	5/20/21		5/21/21 0220

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-14 HC (rev. 30-Sept-2013)

ALPHA

NEW JERSEY CHAIN OF CUSTODY

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 2 of 4

Date Rec'd in Lab: 5/21/21

ALPHA Job #: L2126821

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

Project Information
Project Name: Philadelphia Refinery - AST Closure
Project Location: Philadelphia, PA
Project #: 200.00135.005
(Use Project name as Project #) ☐
Project Manager: William Schmidt
ALPHAQuote #:

Client Information
Client: Ransom Consulting
Address: 2127 Hamilton Ave
Phone: 215-901-4974
Fax:
Email: william.schmidt@ransom

Turn-Around Time
Standard ☑ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables
☐ NJ Full / Reduced
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☑ Other

Billing Information
☑ Same as Client Info
PO #

Regulatory Requirement
☐ SRS Residential/Non Residential
☐ SRS Impact to Groundwater
☐ NJ Ground Water Quality Standards
☐ NJ IGW SPLP Leachate Criteria
☐ Other

Site Information
Is this site impacted by Petroleum? Yes ☑
Petroleum Product:

These samples have been previously analyzed by Alpha ☐

For EPH, selection is REQUIRED: ☐ Category 1 ☐ Category 2

For VOC, selection is REQUIRED: ☐ 1,4-Dioxane ☐ 8011

Other project specific requirements/comments: See Pg. 1
Please specify Metals or TAL.

Sample Filtration: ☐ Done ☐ Lab to do
Preservation: ☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	PA-8270 SIM	Metals (Lead)	TS	PA-8260 HLM	Sample Specific Comments	Total Bottles
26821 - 11	PB-672-05-5501	5/20	1020	S	TS	✓	✓	✓	✓		6
-12	PB-672-06-5501	↓	1040	↓	↓	✓	✓	✓	✓		6
-13	PB-672-07 5501		1045			✓	✓	✓	✓		6
-14	PB-672-08-5501		1100			✓	✓	✓	✓		6
-15	PB-672-09-5501		1115			✓	✓	✓	✓		6
-16	PB-672-10-5501		1125			✓	✓	✓	✓		6
-17	PB-672-11-5501		1140			✓	✓	✓	✓		6
-18	PB-672-12-5501		1155			✓	✓	✓	✓		6
-19	PB-672-13-5501		1210			✓	✓	✓	✓		6
-20	PB-672-14-5501	↓	1225	↓	↓	✓	✓	✓	✓		6
					Container Type	A	A	P	V		
					Preservative	A	A	A	F		

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	5/20/21 1545	[signature] AAL	5/20/21 1545
[signature] AAL	5/20/21 1730	[signature]	5/20/21 1730
[signature]	5/20/21 2200	[signature]	5/20/21 2200
[signature]	5/21/21 0030	[signature]	5/21/21 0230

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-14 HC (rev. 30-Sept-2013)

NEW JERSEY CHAIN OF CUSTODY

ALPHA ANALYTICAL

Westborough, MA 01581 — 8 Walkup Dr. — TEL: 508-898-9220 — FAX: 508-898-9193
Mansfield, MA 02048 — 320 Forbes Blvd — TEL: 508-822-9300 — FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 4 of 3

Date Rec'd in Lab: 5/21/21

ALPHA Job #: L2126821

Client Information
Client: Ransom Consulting
Address: 2127 Hamilton Ave
Phone: 215-901-4974
Fax:
Email: William.Schmidt@Ransom

Project Information
Project Name: Philadelphia Refinery - AST Closures
Project Location: Philadelphia, PA
Project #: 200.00135.005
(Use Project name as Project #)
Project Manager: William Schmidt
ALPHAQuote #:

Turn-Around Time
Standard ☑ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables
☐ NJ Full / Reduced
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☑ Other

Regulatory Requirement
☐ SRS Residential/Non Residential
☐ SRS Impact to Groundwater
☐ NJ Ground Water Quality Standards
☐ NJ IGW SPLP Leachate Criteria
☐ Other

Billing Information
☑ Same as Client Info
PO #

Site Information
Is this site impacted by Petroleum? Yes ☑
Petroleum Product:

These samples have been previously analyzed by Alpha ☐

For EPH, selection is REQUIRED:
☐ Category 1
☐ Category 2

For VOC, selection is REQUIRED:
☐ 1,4-Dioxane
☐ 8011

Other project specific requirements/comments:
SEE PG 1

Please specify Metals or TAL.

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	PA-8270 SIM	METALS (LEAD)	TS	PA-8260 HLM	Sample Specific Comments	Total # Bottles
26821-21	PB-672-15-5501	5/20	1320	S	TS	✓	✓	✓	✓		6
-22	PB-672-16-5501		1330			✓	✓	✓	✓		6
-23	PB-672-17-5501		1340			✓	✓	✓	✓		6
-24	PB-672-18-5501		1350			✓	✓	✓	✓		6
-25	PB-672-19-5501		1355			✓	✓	✓	✓		6
-26	PB-672-20-5501		1410			✓	✓	✓	✓		6
	~~PB-672-21-5501~~										
-27	PB-672-21-5501		1415	S		✓	✓	✓	✓		6
-28	PB-672-22-5501		1430	S		✓	✓	✓	✓		6
-29	TB-210520			A							

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Container Type
Preservative

Relinquished By:	Date/Time	Received By:	Date/Time
	5/20/21 1545	ALPHA	5/20/21 1545
ALPHA	5/20/21 1730		5-21-21 1220
	5/20/21 2206		
	5/21/21 0200		5/21/21 0233

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No. 01-14 HC (rev. 30-Sept-2013)

NEW JERSEY CHAIN OF CUSTODY

ALPHA

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 4 of 4

Date Rec'd in Lab: 5/21/21

ALPHA Job #: L2126821

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

Project Information
Project Name: PHILADELPHIA REFINERY - AST CLOSURE
Project Location: PHILADELPHIA, PA
Project #: 200.00135.005
(Use Project name as Project #) ☐
Project Manager: WILLIAM SCHMIDT
ALPHAQuote #:

Client Information
Client: RANSOM CONSULTING
Address: 2127 HAMILTON AVE
Phone: 215-901-4974
Fax:
Email:

Turn-Around Time
Standard ☑ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables
☐ NJ Full / Reduced
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☑ Other

Billing Information
☑ Same as Client Info
PO #

Regulatory Requirement
☐ SRS Residential/Non Residential
☐ SRS Impact to Groundwater
☐ NJ Ground Water Quality Standards
☐ NJ IGW SPLP Leachate Criteria
☐ Other

Site Information
Is this site impacted by Petroleum? Yes ☑
Petroleum Product:

These samples have been previously analyzed by Alpha ☐

For EPH, selection is REQUIRED:
☐ Category 1
☐ Category 2

For VOC, selection is REQUIRED:
☐ 1,4-Dioxane
☐ 8011

Other project specific requirements/comments:
SEE PG 1
Please specify Metals or TAL.

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	PA-8270SIM-LVI	TOTAL LEAD	PA-8260	8011	PA-8270SIM	TOTAL META CSL(ETCD)	TS	PA-8260 HLW	Sample Specific Comments	Total Bottles
26821-30	FB-210520-1	5/20	1440	A	TS	✓	✓	✓	✓						8
-31	FB-210520-2		1445	A	TS	✓	✓	✓	✓						8
-32	FB-210520-3		1500	A	TS	✓	✓	✓	✓						8
-33	DUP-02	5/20	0800	S	TS					✓	✓	✓	✓		8

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Container Type
Preservative

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	5/20/21 1545	[signature] AAL	5/20/21 1545
[signature] AAL	5/20/21 1730	[signature]	5/20/21 1730
[signature] AAL	5/20/21 2200	[signature]	5/20/21 2200
[signature]	5/21 0200	[signature]	5/21/21 0230

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-14 HC (rev. 30-Sept-2013)

ANALYTICAL REPORT

Lab Number:	L2126948
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY-AST CLOS
Project Number:	200.00135.005
Report Date:	06/09/21

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005

Lab Number: L2126948
Report Date: 06/09/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2126948-01	PB-672-23-SS01	SOIL	PHILADELPHIA, PA	05/21/21 07:40	05/21/21
L2126948-02	FB-210521	WATER	PHILADELPHIA, PA	05/21/21 09:30	05/21/21
L2126948-03	TB-210521	WATER	PHILADELPHIA, PA	05/21/21 00:00	05/21/21

Project Name:	PHILADELPHIA REFINERY-AST CLOS	**Lab Number:**	L2126948
Project Number:	200.00135.005	**Report Date:**	06/09/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	PHILADELPHIA REFINERY-AST CLOS	**Lab Number:**	L2126948
Project Number:	200.00135.005	**Report Date:**	06/09/21

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Sample Receipt

L2126948-03: The analyses performed were specified by the client.

Semivolatile Organics by SIM

L2126948-01D: The sample has elevated detection limits due to the dilution required by the sample matrix.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Caitlin Walukevich

Caitlin Walukevich

Title: Technical Director/Representative

Date: 06/09/21

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126948
Project Number: 200.00135.005
Report Date: 06/09/21

SAMPLE RESULTS

Lab ID: L2126948-01
Client ID: PB-672-23-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/21/21 07:40
Date Received: 05/21/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 05/28/21 02:49
Analyst: MV
Percent Solids: 70%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0036	0.00036	1
Benzene	0.00082	J	mg/kg	0.00089	0.00030	1
1,2-Dichloroethane	ND		mg/kg	0.0018	0.00046	1
Toluene	ND		mg/kg	0.0018	0.00097	1
1,2-Dibromoethane	ND		mg/kg	0.00089	0.00052	1
Ethylbenzene	ND		mg/kg	0.0018	0.00025	1
p/m-Xylene	ND		mg/kg	0.0036	0.0010	1
o-Xylene	ND		mg/kg	0.0018	0.00052	1
Xylenes, Total	ND		mg/kg	0.0018	0.00052	1
Isopropylbenzene	ND		mg/kg	0.0018	0.00019	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0036	0.00034	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0036	0.00060	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	118		70-130
Toluene-d8	109		70-130
4-Bromofluorobenzene	113		70-130
Dibromofluoromethane	110		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126948
Project Number: 200.00135.005
Report Date: 06/09/21

SAMPLE RESULTS

Lab ID: L2126948-02
Client ID: FB-210521
Sample Location: PHILADELPHIA, PA

Date Collected: 05/21/21 09:30
Date Received: 05/21/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8011
Analytical Date: 05/26/21 15:43
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 05/26/21 13:36

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	B

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126948

Project Number: 200.00135.005 **Report Date:** 06/09/21

SAMPLE RESULTS

Lab ID: L2126948-02 Date Collected: 05/21/21 09:30
Client ID: FB-210521 Date Received: 05/21/21
Sample Location: PHILADELPHIA, PA Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 05/25/21 12:40
Analyst: KTD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	84		70-130
4-Bromofluorobenzene	76		70-130
Dibromofluoromethane	117		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126948
Project Number: 200.00135.005
Report Date: 06/09/21

SAMPLE RESULTS

Lab ID: L2126948-03
Client ID: TB-210521
Sample Location: PHILADELPHIA, PA

Date Collected: 05/21/21 00:00
Date Received: 05/21/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8011
Analytical Date: 05/26/21 15:49
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 05/26/21 13:36

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	B

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126948

Project Number: 200.00135.005 **Report Date:** 06/09/21

SAMPLE RESULTS

Lab ID: L2126948-03 Date Collected: 05/21/21 00:00
Client ID: TB-210521 Date Received: 05/21/21
Sample Location: PHILADELPHIA, PA Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 05/25/21 13:06
Analyst: KTD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	88		70-130
4-Bromofluorobenzene	77		70-130
Dibromofluoromethane	118		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126948

Project Number: 200.00135.005 **Report Date:** 06/09/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 05/25/21 08:53
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 02-03 Batch: WG1503616-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	89		70-130
4-Bromofluorobenzene	78		70-130
Dibromofluoromethane	121		70-130

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126948
Report Date: 06/09/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8011
Analytical Date: 05/26/21 14:40
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 05/26/21 13:36

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 02-03 Batch: WG1503980-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.005	B

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126948

Project Number: 200.00135.005 **Report Date:** 06/09/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 05/27/21 19:43
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01 Batch: WG1504868-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	102		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126948

Report Date: 06/09/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 02-03 Batch: WG1503616-3 WG1503616-4								
Methyl tert butyl ether	89		89		63-130	0		20
Benzene	96		90		70-130	6		20
1,2-Dichloroethane	100		100		70-130	0		20
Toluene	91		86		70-130	6		20
Ethylbenzene	93		91		70-130	2		20
p/m-Xylene	100		95		70-130	5		20
o-Xylene	95		95		70-130	0		20
Isopropylbenzene	88		86		70-130	2		20
1,3,5-Trimethylbenzene	88		84		64-130	5		20
1,2,4-Trimethylbenzene	88		85		70-130	3		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	96		100		70-130
Toluene-d8	89		90		70-130
4-Bromofluorobenzene	76		79		70-130
Dibromofluoromethane	110		112		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126948

Report Date: 06/09/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab	Associated sample(s): 02-03 Batch: WG1503980-2								
1,2-Dibromoethane	85		-		80-120	-		20	B

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126948

Report Date: 06/09/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01 Batch: WG1504868-3 WG1504868-4								
Methyl tert butyl ether	95		92		66-130	3		30
Benzene	111		106		70-130	5		30
1,2-Dichloroethane	112		108		70-130	4		30
Toluene	106		103		70-130	3		30
1,2-Dibromoethane	105		106		70-130	1		30
Ethylbenzene	103		101		70-130	2		30
p/m-Xylene	101		100		70-130	1		30
o-Xylene	100		98		70-130	2		30
Isopropylbenzene	100		98		70-130	2		30
1,3,5-Trimethylbenzene	100		98		70-130	2		30
1,2,4-Trimethylbenzene	100		99		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	107		104		70-130
Toluene-d8	102		103		70-130
4-Bromofluorobenzene	96		97		70-130
Dibromofluoromethane	100		99		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126948
Project Number: 200.00135.005
Report Date: 06/09/21

SAMPLE RESULTS

Lab ID: L2126948-01 D
Client ID: PB-672-23-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 05/21/21 07:40
Date Received: 05/21/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 06/04/21 17:43
Analyst: DV
Percent Solids: 70%

Extraction Method: EPA 3546
Extraction Date: 06/03/21 08:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.10		mg/kg	0.094	0.017	10
Fluorene	0.024	J	mg/kg	0.094	0.011	10
Phenanthrene	0.16		mg/kg	0.094	0.0080	10
Anthracene	0.034	J	mg/kg	0.094	0.0075	10
Pyrene	0.20		mg/kg	0.094	0.0066	10
Benzo(a)anthracene	0.28		mg/kg	0.094	0.0089	10
Chrysene	0.43		mg/kg	0.094	0.0070	10
Benzo(b)fluoranthene	0.37		mg/kg	0.094	0.0089	10
Benzo(a)pyrene	0.52		mg/kg	0.094	0.011	10
Benzo(ghi)perylene	0.56		mg/kg	0.094	0.0080	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	51		23-120
2-Fluorobiphenyl	39		30-120
4-Terphenyl-d14	31		18-120

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126948
Project Number: 200.00135.005
Report Date: 06/09/21

SAMPLE RESULTS

Lab ID: L2126948-02
Client ID: FB-210521
Sample Location: PHILADELPHIA, PA

Date Collected: 05/21/21 09:30
Date Received: 05/21/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 05/27/21 21:31
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 05/26/21 19:46

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	94		23-120
2-Fluorobiphenyl	80		15-120
4-Terphenyl-d14	92		41-149

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126948
Report Date: 06/09/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 05/27/21 21:12
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 05/26/21 19:46

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 02 Batch: WG1504177-1					
Naphthalene	ND		ug/l	0.10	0.05
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	ND		ug/l	0.05	0.02
Anthracene	ND		ug/l	0.10	0.01
Pyrene	0.02	J	ug/l	0.10	0.02
Benzo(a)anthracene	ND		ug/l	0.05	0.02
Chrysene	ND		ug/l	0.10	0.01
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Benzo(ghi)perylene	ND		ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	68		21-120
Phenol-d6	62		10-120
Nitrobenzene-d5	106		23-120
2-Fluorobiphenyl	93		15-120
2,4,6-Tribromophenol	70		10-120
4-Terphenyl-d14	105		41-149

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126948
Report Date: 06/09/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 06/04/21 15:15
Analyst: RP

Extraction Method: EPA 3546
Extraction Date: 06/03/21 08:52

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01 Batch: WG1507007-1					
Naphthalene	ND		mg/kg	0.0066	0.0012
Fluorene	ND		mg/kg	0.0066	0.00079
Phenanthrene	ND		mg/kg	0.0066	0.00056
Anthracene	ND		mg/kg	0.0066	0.00053
Pyrene	ND		mg/kg	0.0066	0.00046
Benzo(a)anthracene	ND		mg/kg	0.0066	0.00063
Chrysene	ND		mg/kg	0.0066	0.00050
Benzo(b)fluoranthene	ND		mg/kg	0.0066	0.00063
Benzo(a)pyrene	ND		mg/kg	0.0066	0.00079
Benzo(ghi)perylene	ND		mg/kg	0.0066	0.00056

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	80		25-120
Phenol-d6	89		10-120
Nitrobenzene-d5	95		23-120
2-Fluorobiphenyl	75		30-120
2,4,6-Tribromophenol	74		10-136
4-Terphenyl-d14	82		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126948

Report Date: 06/09/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 02 Batch: WG1504177-2 WG1504177-3								
Naphthalene	77		77		40-140	0		40
Fluorene	82		81		40-140	1		40
Phenanthrene	84		83		40-140	1		40
Anthracene	85		85		40-140	0		40
Pyrene	84		81		26-127	4		40
Benzo(a)anthracene	86		82		40-140	5		40
Chrysene	84		84		40-140	0		40
Benzo(b)fluoranthene	90		85		40-140	6		40
Benzo(a)pyrene	90		87		40-140	3		40
Benzo(ghi)perylene	87		85		40-140	2		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	73		75		21-120
Phenol-d6	60		60		10-120
Nitrobenzene-d5	93		94		23-120
2-Fluorobiphenyl	80		80		15-120
2,4,6-Tribromophenol	82		83		10-120
4-Terphenyl-d14	89		87		41-149

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126948

Report Date: 06/09/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01 Batch: WG1507007-2 WG1507007-3								
Naphthalene	69		72		40-140	4		50
Fluorene	70		74		40-140	6		50
Phenanthrene	70		72		40-140	3		50
Anthracene	75		77		40-140	3		50
Pyrene	72		76		35-142	5		50
Benzo(a)anthracene	73		71		40-140	3		50
Chrysene	67		70		40-140	4		50
Benzo(b)fluoranthene	72		76		40-140	5		50
Benzo(a)pyrene	76		75		40-140	1		50
Benzo(ghi)perylene	75		72		40-140	4		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	74		78		25-120
Phenol-d6	82		86		10-120
Nitrobenzene-d5	88		93		23-120
2-Fluorobiphenyl	68		72		30-120
2,4,6-Tribromophenol	66		69		10-136
4-Terphenyl-d14	71		77		18-120

METALS

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126948
Project Number: 200.00135.005
Report Date: 06/09/21

SAMPLE RESULTS

Lab ID: L2126948-01
Client ID: PB-672-23-SS01
Sample Location: PHILADELPHIA, PA
Date Collected: 05/21/21 07:40
Date Received: 05/21/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 70%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	153		mg/kg	2.72	0.146	1	05/31/21 05:45	06/08/21 21:34	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY-AST CLOS
Lab Number: L2126948
Project Number: 200.00135.005
Report Date: 06/09/21

SAMPLE RESULTS

Lab ID: L2126948-02
Client ID: FB-210521
Sample Location: PHILADELPHIA, PA
Date Collected: 05/21/21 09:30
Date Received: 05/21/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	05/24/21 16:22	06/07/21 17:28	EPA 3005A	1,6020B	CD

Project Name: PHILADELPHIA REFINERY-AST CLOS **Lab Number:** L2126948

Project Number: 200.00135.005 **Report Date:** 06/09/21

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02 Batch: WG1502834-1										
Lead, Total	ND		ug/l	1.000	0.3430	1	05/24/21 16:22	05/26/21 20:46	1,6020B	BM

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1505625-1										
Lead, Total	ND		mg/kg	2.00	0.107	1	05/31/21 05:45	06/03/21 20:44	1,6010D	SV

Prep Information

Digestion Method: EPA 3050B

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126948

Report Date: 06/09/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02 Batch: WG1502834-2								
Lead, Total	106		-		80-120	-		
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1505625-2 SRM Lot Number: D109-540								
Lead, Total	98		-		72-128	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005

Lab Number: L2126948
Report Date: 06/09/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1502834-3 QC Sample: L2126825-11 Client ID: MS Sample												
Lead, Total	ND	510	531.0	104		-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1505625-3 QC Sample: L2125488-01 Client ID: MS Sample												
Lead, Total	9.47	44.9	43.6	76		-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126948

Report Date: 06/09/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1502834-4 QC Sample: L2126825-11 Client ID: DUP Sample						
Lead, Total	ND	ND	ug/l	NC		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1505625-4 QC Sample: L2125488-01 Client ID: DUP Sample						
Lead, Total	9.47	11.0	mg/kg	15		20

INORGANICS
&
MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005
Lab Number: L2126948
Report Date: 06/09/21

SAMPLE RESULTS

Lab ID: L2126948-01
Client ID: PB-672-23-SS01
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 05/21/21 07:40
Date Received: 05/21/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	70.4		%	0.100	NA	1	-	05/22/21 10:21	121,2540G	RI

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY-AST CLOS

Project Number: 200.00135.005

Lab Number: L2126948

Report Date: 06/09/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1502367-1 QC Sample: L2126873-21 Client ID: DUP Sample						
Solids, Total	71.9	72.1	%	0		20

Project Name: PHILADELPHIA REFINERY-AST CLOS
Project Number: 200.00135.005

Lab Number: L2126948
Report Date: 06/09/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2126948-01A	Vial MeOH preserved	A	NA		3.4	Y	Absent		PA-8260HLW(14)
L2126948-01B	Vial water preserved	A	NA		3.4	Y	Absent	22-MAY-21 06:50	PA-8260HLW(14)
L2126948-01C	Vial water preserved	A	NA		3.4	Y	Absent	22-MAY-21 06:50	PA-8260HLW(14)
L2126948-01D	Plastic 120ml unpreserved	A	NA		3.4	Y	Absent		TS(7)
L2126948-01E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.4	Y	Absent		PB-TI(180)
L2126948-01F	Glass 120ml/4oz unpreserved	A	NA		3.4	Y	Absent		PA-8270SIM(14)
L2126948-02A	Vial HCl preserved	A	NA		3.4	Y	Absent		PA-8260(14)
L2126948-02B	Vial HCl preserved	A	NA		3.4	Y	Absent		PA-8260(14)
L2126948-02C	Vial HCl preserved	A	NA		3.4	Y	Absent		PA-8260(14)
L2126948-02D	Vial Na2S2O3 preserved	A	NA		3.4	Y	Absent		8011(14)
L2126948-02E	Vial Na2S2O3 preserved	A	NA		3.4	Y	Absent		8011(14)
L2126948-02F	Plastic 250ml HNO3 preserved	A	<2	<2	3.4	Y	Absent		PB-6020T-PPB(180)
L2126948-02G	Amber 250ml unpreserved	A	7	7	3.4	Y	Absent		PA-8270SIM-LVI(7)
L2126948-02H	Amber 250ml unpreserved	A	7	7	3.4	Y	Absent		PA-8270SIM-LVI(7)
L2126948-03A	Vial HCl preserved	A	NA		3.4	Y	Absent		PA-8260(14)
L2126948-03B	Vial HCl preserved	A	NA		3.4	Y	Absent		PA-8260(14)
L2126948-03C	Vial Na2S2O3 preserved	A	NA		3.4	Y	Absent		8011(14)
L2126948-03D	Vial Na2S2O3 preserved	A	NA		3.4	Y	Absent		8011(14)

*Values in parentheses indicate holding time in days

Project Name:	PHILADELPHIA REFINERY-AST CLOS	**Lab Number:**	L2126948
Project Number:	200.00135.005	**Report Date:**	06/09/21

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY-AST CLOS	**Lab Number:**	L2126948
Project Number:	200.00135.005	**Report Date:**	06/09/21

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. (Note: 'PFAS, Total (6)' is applicable to MassDEP DW compliance analysis only.). If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY-AST CLOS	**Lab Number:**	L2126948
Project Number:	200.00135.005	**Report Date:**	06/09/21

Data Qualifiers

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY-AST CLOS	**Lab Number:**	L2126948
Project Number:	200.00135.005	**Report Date:**	06/09/21

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

NEW JERSEY CHAIN OF CUSTODY

ALPHA ANALYTICAL

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page of

Date Rec'd in Lab: 5/22/21

ALPHA Job #: L 2126948

Client Information

Client: Ransom Consulting
Address: 2127 Hamilton Ave
Phone: 215-401-4974
Fax:
Email: William.Schmidt@Ransom

Project Information

Project Name: Philadelphia Refinery - AST Closure
Project Location: Philadelphia, PA
Project #: 200.00135.005
(Use Project name as Project #)
Project Manager: William Schmidt
ALPHAQuote #:

Turn-Around Time

Standard
Rush (only if pre approved)
Due Date:
# of Days:

Deliverables

- NJ Full / Reduced
- EQuIS (1 File) / EQuIS (4 File)
- Other: Email, AVEX

Regulatory Requirement

- SRS Residential/Non Residential
- SRS Impact to Groundwater
- NJ Ground Water Quality Standards
- NJ IGW SPLP Leachate Criteria
- Other

Billing Information

Same as Client Info
PO #

Site Information

Is this site impacted by Petroleum? Yes
Petroleum Product:

These samples have been previously analyzed by Alpha

For EPH, selection is REQUIRED:
- Category 1
- Category 2

For VOC, selection is REQUIRED:
- 1,4-Dioxane
- 8011

Other project specific requirements/comments:
Report Only Project Specific Analytes List
Please specify Metals or TAL.
Padep Leaded/Unleaded Gasoline Short List
No 4-6 Fuel Oil Short List, Lead Only

ANALYSIS

Sample Filtration
- Done
- Lab to do

Preservation
- Lab to do

(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	PA-8270 SIM	Metals (Lead)	TS	PA-8260 HLM	PA-8270 SIM LVI	Total Lead	PA 8260	8011	Sample Specific Comments	Total Bottle
26948-01	DB-672-23-5501	5/21	0740	S	TS	✓	✓	✓	✓						6
-02	FB-210521		0930	A	TS					✓	✓	✓	✓		8
-03	TB-210521														

Container Type: A A P V
Preservative: A A A F

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Relinquished By:	Date/Time	Received By:	Date/Time
	5/21/21		5/21/21 1100
	5/21/21 17:02		5/21/21 17:02
	5/21/21		5/21/21 2300
	5/22/21 0215		5/22/21 0215

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-14 HC (rev. 30-Sept-2013)

ANALYTICAL REPORT

Lab Number:	L2165356
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PES REFINERY-860 RELEASE
Project Number:	200.00135.005.03
Report Date:	12/08/21

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: PES REFINERY-860 RELEASE
Project Number: 200.00135.005.03

Lab Number: L2165356
Report Date: 12/08/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2165356-01	PB-666-12R-0.0-0.5	SOIL	PHILADELPHIA, PA	11/29/21 13:20	11/29/21
L2165356-02	PB-666-12R-6.0-6.5	SOIL	PHILADELPHIA, PA	11/29/21 13:25	11/29/21
L2165356-03	PB-666-12R-14.5-15.0	SOIL	PHILADELPHIA, PA	11/29/21 13:30	11/29/21
L2165356-04	PB-666-11R-0.0-0.5	SOIL	PHILADELPHIA, PA	11/29/21 14:15	11/29/21
L2165356-05	PB-666-11R-6.0-6.5	SOIL	PHILADELPHIA, PA	11/29/21 14:20	11/29/21
L2165356-06	PB-666-11R-14.5-15.0	SOIL	PHILADELPHIA, PA	11/29/21 14:30	11/29/21
L2165356-07	PB-666-29-0.0-0.5	SOIL	PHILADELPHIA, PA	11/29/21 15:00	11/29/21
L2165356-08	PB-666-29-3.5-4.0	SOIL	PHILADELPHIA, PA	11/29/21 15:05	11/29/21
L2165356-09	PB-666-29-6.0-6.5	SOIL	PHILADELPHIA, PA	11/29/21 15:10	11/29/21
L2165356-10	FB-211129	WATER	PHILADELPHIA, PA	11/29/21 14:00	11/29/21
L2165356-11	TB-211129	WATER	PHILADELPHIA, PA	11/29/21 00:00	11/29/21

Project Name:	PES REFINERY-860 RELEASE	**Lab Number:**	L2165356
Project Number:	200.00135.005.03	**Report Date:**	12/08/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	PES REFINERY-860 RELEASE	**Lab Number:**	L2165356
Project Number:	200.00135.005.03	**Report Date:**	12/08/21

Case Narrative (continued)

Report Submission

December 08, 2021: This final report includes the results of all requested analyses.

December 07, 2021: This is a preliminary report.

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Semivolatile Organics

L2165356-01D and -08D: The sample has elevated detection limits due to the dilution required by the sample matrix.

L2165356-05D: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix, and due to the analytical dilution required by the sample matrix.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Melissa Sturgis Melissa Sturgis

Title: Technical Director/Representative Date: 12/08/21

ORGANICS

VOLATILES

Project Name: PES REFINERY-860 RELEASE **Lab Number:** L2165356

Project Number: 200.00135.005.03 **Report Date:** 12/08/21

SAMPLE RESULTS

Lab ID: L2165356-04
Client ID: PB-666-11R-0.0-0.5
Sample Location: PHILADELPHIA, PA

Date Collected: 11/29/21 14:15
Date Received: 11/29/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 12/02/21 08:06
Analyst: MKS
Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Benzene	0.0013		mg/kg	0.00078	0.00026	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	116		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	108		70-130

Project Name: PES REFINERY-860 RELEASE
Lab Number: L2165356
Project Number: 200.00135.005.03
Report Date: 12/08/21

SAMPLE RESULTS

Lab ID: L2165356-05
Client ID: PB-666-11R-6.0-6.5
Sample Location: PHILADELPHIA, PA

Date Collected: 11/29/21 14:20
Date Received: 11/29/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 12/02/21 08:32
Analyst: MKS
Percent Solids: 72%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Benzene	0.00088		mg/kg	0.00065	0.00022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	115		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	106		70-130

Project Name: PES REFINERY-860 RELEASE **Lab Number:** L2165356

Project Number: 200.00135.005.03 **Report Date:** 12/08/21

SAMPLE RESULTS

Lab ID: L2165356-07
Client ID: PB-666-29-0.0-0.5
Sample Location: PHILADELPHIA, PA

Date Collected: 11/29/21 15:00
Date Received: 11/29/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 12/02/21 08:57
Analyst: MKS
Percent Solids: 70%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Benzene	ND		mg/kg	0.00078	0.00026	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	118		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	108		70-130

Project Name: PES REFINERY-860 RELEASE **Lab Number:** L2165356

Project Number: 200.00135.005.03 **Report Date:** 12/08/21

SAMPLE RESULTS

Lab ID: L2165356-08
Client ID: PB-666-29-3.5-4.0
Sample Location: PHILADELPHIA, PA

Date Collected: 11/29/21 15:05
Date Received: 11/29/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 12/02/21 09:22
Analyst: MKS
Percent Solids: 77%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Benzene	ND		mg/kg	0.00093	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	117		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	107		70-130

Project Name: PES REFINERY-860 RELEASE **Lab Number:** L2165356

Project Number: 200.00135.005.03 **Report Date:** 12/08/21

SAMPLE RESULTS

Lab ID: L2165356-09
Client ID: PB-666-29-6.0-6.5
Sample Location: PHILADELPHIA, PA

Date Collected: 11/29/21 15:10
Date Received: 11/29/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 12/02/21 09:47
Analyst: MKS
Percent Solids: 70%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Benzene	ND		mg/kg	0.00079	0.00026	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	120		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	109		70-130

Project Name: PES REFINERY-860 RELEASE **Lab Number:** L2165356

Project Number: 200.00135.005.03 **Report Date:** 12/08/21

SAMPLE RESULTS

Lab ID: L2165356-10
Client ID: FB-211129
Sample Location: PHILADELPHIA, PA

Date Collected: 11/29/21 14:00
Date Received: 11/29/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 12/05/21 12:36
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Benzene	ND		ug/l	0.50	0.16	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	105		70-130

Project Name: PES REFINERY-860 RELEASE
Lab Number: L2165356
Project Number: 200.00135.005.03
Report Date: 12/08/21

SAMPLE RESULTS

Lab ID: L2165356-11
Client ID: TB-211129
Sample Location: PHILADELPHIA, PA
Date Collected: 11/29/21 00:00
Date Received: 11/29/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 12/05/21 12:56
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Benzene	ND		ug/l	0.50	0.16	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	106		70-130

Project Name: PES REFINERY-860 RELEASE **Lab Number:** L2165356

Project Number: 200.00135.005.03 **Report Date:** 12/08/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 12/02/21 07:42
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 04-05,07-09 Batch: WG1578798-5					
Benzene	ND		mg/kg	0.00050	0.00017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	112		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	102		70-130

Project Name: PES REFINERY-860 RELEASE **Lab Number:** L2165356

Project Number: 200.00135.005.03 **Report Date:** 12/08/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 12/05/21 06:35
Analyst: TMS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 10-11 Batch: WG1579408-5					
Benzene	ND		ug/l	0.50	0.16

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	106		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PES REFINERY-860 RELEASE

Project Number: 200.00135.005.03

Lab Number: L2165356

Report Date: 12/08/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 04-05,07-09 Batch: WG1578798-3 WG1578798-4								
Benzene	112		106		70-130	6		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	111		113		70-130
Toluene-d8	98		98		70-130
4-Bromofluorobenzene	95		94		70-130
Dibromofluoromethane	103		105		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PES REFINERY-860 RELEASE

Project Number: 200.00135.005.03

Lab Number: L2165356

Report Date: 12/08/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 10-11 Batch: WG1579408-3 WG1579408-4								
Benzene	98		100		70-130	2		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	108		102		70-130
Toluene-d8	99		96		70-130
4-Bromofluorobenzene	92		97		70-130
Dibromofluoromethane	106		108		70-130

SEMIVOLATILES

Project Name: PES REFINERY-860 RELEASE
Lab Number: L2165356
Project Number: 200.00135.005.03
Report Date: 12/08/21

SAMPLE RESULTS

Lab ID: L2165356-01 D
Client ID: PB-666-12R-0.0-0.5
Sample Location: PHILADELPHIA, PA

Date Collected: 11/29/21 13:20
Date Received: 11/29/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 12/06/21 13:32
Analyst: WR
Percent Solids: 71%

Extraction Method: EPA 3546
Extraction Date: 12/02/21 16:12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.84	J	mg/kg	1.2	0.14	5
Benzo(b)fluoranthene	31.		mg/kg	0.70	0.20	5
Benzo(a)pyrene	20.		mg/kg	0.93	0.28	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	70		18-120

Project Name: PES REFINERY-860 RELEASE
Lab Number: L2165356
Project Number: 200.00135.005.03
Report Date: 12/08/21

SAMPLE RESULTS

Lab ID: L2165356-02
Client ID: PB-666-12R-6.0-6.5
Sample Location: PHILADELPHIA, PA

Date Collected: 11/29/21 13:25
Date Received: 11/29/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 12/04/21 03:39
Analyst: EK
Percent Solids: 74%

Extraction Method: EPA 3546
Extraction Date: 12/02/21 16:12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.054	J	mg/kg	0.22	0.027	1
Benzo(b)fluoranthene	0.32		mg/kg	0.13	0.037	1
Benzo(a)pyrene	0.25		mg/kg	0.18	0.053	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	76		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	63		18-120

Project Name: PES REFINERY-860 RELEASE
Lab Number: L2165356
Project Number: 200.00135.005.03
Report Date: 12/08/21

SAMPLE RESULTS

Lab ID: L2165356-04 D2
Client ID: PB-666-11R-0.0-0.5
Sample Location: PHILADELPHIA, PA

Date Collected: 11/29/21 14:15
Date Received: 11/29/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 12/06/21 15:24
Analyst: WR
Percent Solids: 82%

Extraction Method: EPA 3546
Extraction Date: 12/02/21 16:12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Benzo(b)fluoranthene	57.		mg/kg	1.2	0.34	10

Project Name: PES REFINERY-860 RELEASE
Lab Number: L2165356
Project Number: 200.00135.005.03
Report Date: 12/08/21

SAMPLE RESULTS

Lab ID: L2165356-04 D
Client ID: PB-666-11R-0.0-0.5
Sample Location: PHILADELPHIA, PA

Date Collected: 11/29/21 14:15
Date Received: 11/29/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 12/06/21 13:57
Analyst: WR
Percent Solids: 82%

Extraction Method: EPA 3546
Extraction Date: 12/02/21 16:12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Benzo(b)fluoranthene	50.	E	mg/kg	0.60	0.17	5
Benzo(a)pyrene	34.		mg/kg	0.80	0.24	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	63		23-120
2-Fluorobiphenyl	55		30-120
4-Terphenyl-d14	54		18-120

Project Name: PES REFINERY-860 RELEASE
Lab Number: L2165356
Project Number: 200.00135.005.03
Report Date: 12/08/21

SAMPLE RESULTS

Lab ID: L2165356-05 D
Client ID: PB-666-11R-6.0-6.5
Sample Location: PHILADELPHIA, PA

Date Collected: 11/29/21 14:20
Date Received: 11/29/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 12/06/21 13:11
Analyst: IM
Percent Solids: 72%

Extraction Method: EPA 3546
Extraction Date: 12/03/21 18:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Benzo(b)fluoranthene	18.		mg/kg	3.9	1.1	10
Benzo(a)pyrene	12.		mg/kg	5.2	1.6	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	42		23-120
2-Fluorobiphenyl	43		30-120
4-Terphenyl-d14	40		18-120

Project Name: PES REFINERY-860 RELEASE
Lab Number: L2165356
Project Number: 200.00135.005.03
Report Date: 12/08/21

SAMPLE RESULTS

Lab ID: L2165356-07
Client ID: PB-666-29-0.0-0.5
Sample Location: PHILADELPHIA, PA

Date Collected: 11/29/21 15:00
Date Received: 11/29/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 12/03/21 20:53
Analyst: CMM
Percent Solids: 70%

Extraction Method: EPA 3546
Extraction Date: 12/02/21 16:13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Benzo(b)fluoranthene	0.45		mg/kg	0.14	0.040	1
Benzo(a)pyrene	0.37		mg/kg	0.19	0.057	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	68		18-120

Project Name: PES REFINERY-860 RELEASE
Lab Number: L2165356
Project Number: 200.00135.005.03
Report Date: 12/08/21

SAMPLE RESULTS

Lab ID: L2165356-08 D
Client ID: PB-666-29-3.5-4.0
Sample Location: PHILADELPHIA, PA

Date Collected: 11/29/21 15:05
Date Received: 11/29/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 12/06/21 15:09
Analyst: WR
Percent Solids: 77%

Extraction Method: EPA 3546
Extraction Date: 12/02/21 16:13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Benzo(b)fluoranthene	1.4		mg/kg	0.64	0.18	5
Benzo(a)pyrene	1.0		mg/kg	0.85	0.26	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	60		23-120
2-Fluorobiphenyl	50		30-120
4-Terphenyl-d14	46		18-120

Project Name: PES REFINERY-860 RELEASE
Lab Number: L2165356
Project Number: 200.00135.005.03
Report Date: 12/08/21

SAMPLE RESULTS

Lab ID: L2165356-09
Client ID: PB-666-29-6.0-6.5
Sample Location: PHILADELPHIA, PA

Date Collected: 11/29/21 15:10
Date Received: 11/29/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 12/04/21 01:27
Analyst: EK
Percent Solids: 70%

Extraction Method: EPA 3546
Extraction Date: 12/02/21 16:13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Benzo(b)fluoranthene	0.051	J	mg/kg	0.14	0.040	1
Benzo(a)pyrene	ND		mg/kg	0.19	0.058	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	87		23-120
2-Fluorobiphenyl	83		30-120
4-Terphenyl-d14	70		18-120

Project Name: PES REFINERY-860 RELEASE
Lab Number: L2165356
Project Number: 200.00135.005.03
Report Date: 12/08/21

SAMPLE RESULTS

Lab ID: L2165356-10
Client ID: FB-211129
Sample Location: PHILADELPHIA, PA

Date Collected: 11/29/21 14:00
Date Received: 11/29/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 12/06/21 11:19
Analyst: JJW

Extraction Method: EPA 3510C
Extraction Date: 12/05/21 18:22

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	62		23-120
2-Fluorobiphenyl	65		15-120
4-Terphenyl-d14	63		41-149

Project Name: PES REFINERY-860 RELEASE
Project Number: 200.00135.005.03
Lab Number: L2165356
Report Date: 12/08/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 12/03/21 02:28
Analyst: CMM

Extraction Method: EPA 3546
Extraction Date: 12/02/21 16:12

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-02,04,07-09 Batch: WG1578390-1					
Naphthalene	ND		mg/kg	0.16	0.020
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	66		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	74		18-120

Project Name: PES REFINERY-860 RELEASE
Project Number: 200.00135.005.03
Lab Number: L2165356
Report Date: 12/08/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 12/05/21 12:56
Analyst: JJW

Extraction Method: EPA 3510C
Extraction Date: 12/05/21 02:56

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 10 Batch: WG1579243-1					
Naphthalene	ND		ug/l	0.10	0.05
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01
Benzo(a)pyrene	ND		ug/l	0.10	0.02

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	55		21-120
Phenol-d6	45		10-120
Nitrobenzene-d5	67		23-120
2-Fluorobiphenyl	64		15-120
2,4,6-Tribromophenol	64		10-120
4-Terphenyl-d14	69		41-149

Project Name: PES REFINERY-860 RELEASE
Project Number: 200.00135.005.03
Lab Number: L2165356
Report Date: 12/08/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 12/04/21 00:52
Analyst: IM

Extraction Method: EPA 3546
Extraction Date: 12/03/21 12:33

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 05 Batch: WG1579722-1					
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	70		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	82		18-120

Lab Control Sample Analysis
Batch Quality Control

Project Name: PES REFINERY-860 RELEASE
Project Number: 200.00135.005.03

Lab Number: L2165356
Report Date: 12/08/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02,04,07-09 Batch: WG1578390-2 WG1578390-3								
Naphthalene	73		70		40-140	4		50
Benzo(b)fluoranthene	81		78		40-140	4		50
Benzo(a)pyrene	77		73		40-140	5		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	74		71		23-120
2-Fluorobiphenyl	82		77		30-120
4-Terphenyl-d14	83		78		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: PES REFINERY-860 RELEASE

Project Number: 200.00135.005.03

Lab Number: L2165356

Report Date: 12/08/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 10 Batch: WG1579243-2 WG1579243-3								
Naphthalene	71		68		40-140	4		40
Benzo(b)fluoranthene	75		84		40-140	11		40
Benzo(a)pyrene	77		84		40-140	9		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	66		62		21-120
Phenol-d6	54		52		10-120
Nitrobenzene-d5	78		72		23-120
2-Fluorobiphenyl	73		72		15-120
2,4,6-Tribromophenol	82		85		10-120
4-Terphenyl-d14	75		81		41-149

Lab Control Sample Analysis

Batch Quality Control

Project Name: PES REFINERY-860 RELEASE

Project Number: 200.00135.005.03

Lab Number: L2165356

Report Date: 12/08/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 05 Batch: WG1579722-2 WG1579722-3								
Benzo(b)fluoranthene	72		70		40-140	3		50
Benzo(a)pyrene	67		66		40-140	2		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	64		61		23-120
2-Fluorobiphenyl	67		64		30-120
4-Terphenyl-d14	70		68		18-120

METALS

Project Name: PES REFINERY-860 RELEASE
Lab Number: L2165356
Project Number: 200.00135.005.03
Report Date: 12/08/21

SAMPLE RESULTS

Lab ID: L2165356-01
Client ID: PB-666-12R-0.0-0.5
Sample Location: PHILADELPHIA, PA
Date Collected: 11/29/21 13:20
Date Received: 11/29/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 71%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2460		mg/kg	2.68	0.144	1	12/02/21 21:35	12/06/21 14:49	EPA 3050B	1,6010D	GD

Project Name: PES REFINERY-860 RELEASE
Lab Number: L2165356
Project Number: 200.00135.005.03
Report Date: 12/08/21

SAMPLE RESULTS

Lab ID: L2165356-02
Client ID: PB-666-12R-6.0-6.5
Sample Location: PHILADELPHIA, PA

Date Collected: 11/29/21 13:25
Date Received: 11/29/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 74%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	307		mg/kg	2.69	0.144	1	12/02/21 21:35	12/06/21 14:54	EPA 3050B	1,6010D	GD

Project Name: PES REFINERY-860 RELEASE
Lab Number: L2165356
Project Number: 200.00135.005.03
Report Date: 12/08/21

SAMPLE RESULTS

Lab ID: L2165356-10
Client ID: FB-211129
Sample Location: PHILADELPHIA, PA
Date Collected: 11/29/21 14:00
Date Received: 11/29/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	12/01/21 09:37	12/01/21 15:01	EPA 3005A	1,6020B	CD

Project Name: PES REFINERY-860 RELEASE **Lab Number:** L2165356

Project Number: 200.00135.005.03 **Report Date:** 12/08/21

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 10 Batch: WG1577334-1										
Lead, Total	ND		ug/l	1.000	0.3430	1	12/01/21 09:37	12/01/21 14:10	1,6020B	CD

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-02 Batch: WG1578288-1										
Lead, Total	ND		mg/kg	2.00	0.107	1	12/02/21 21:35	12/06/21 12:29	1,6010D	GD

Prep Information

Digestion Method: EPA 3050B

Lab Control Sample Analysis

Batch Quality Control

Project Name: PES REFINERY-860 RELEASE

Project Number: 200.00135.005.03

Lab Number: L2165356

Report Date: 12/08/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 10 Batch: WG1577334-2								
Lead, Total	102		-		80-120	-		
Total Metals - Mansfield Lab Associated sample(s): 01-02 Batch: WG1578288-2 SRM Lot Number: D109-540								
Lead, Total	96		-		72-128	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: PES REFINERY-860 RELEASE
Project Number: 200.00135.005.03

Lab Number: L2165356
Report Date: 12/08/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 10 QC Batch ID: WG1577334-3 QC Sample: L2165121-03 Client ID: MS Sample												
Lead, Total	ND	530	536.2	101		-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1578288-3 WG1578288-4 QC Sample: L2165322-01 Client ID: MS Sample												
Lead, Total	6.23	45.1	41.5	78		42.7	80		75-125	3		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PES REFINERY-860 RELEASE

Project Number: 200.00135.005.03

Lab Number: L2165356

Report Date: 12/08/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 10 QC Batch ID: WG1577334-4 QC Sample: L2165121-03 Client ID: DUP Sample						
Lead, Total	ND	ND	ug/l	NC		20

INORGANICS
&
MISCELLANEOUS

Project Name: PES REFINERY-860 RELEASE
Project Number: 200.00135.005.03
Lab Number: L2165356
Report Date: 12/08/21

SAMPLE RESULTS

Lab ID: L2165356-01
Client ID: PB-666-12R-0.0-0.5
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/29/21 13:20
Date Received: 11/29/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	71.2		%	0.100	NA	1	-	11/30/21 13:07	121,2540G	RI

Project Name: PES REFINERY-860 RELEASE
Lab Number: L2165356
Project Number: 200.00135.005.03
Report Date: 12/08/21

SAMPLE RESULTS

Lab ID: L2165356-02
Client ID: PB-666-12R-6.0-6.5
Sample Location: PHILADELPHIA, PA

Date Collected: 11/29/21 13:25
Date Received: 11/29/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	74.3		%	0.100	NA	1	-	11/30/21 13:07	121,2540G	RI

Project Name: PES REFINERY-860 RELEASE
Project Number: 200.00135.005.03
Lab Number: L2165356
Report Date: 12/08/21

SAMPLE RESULTS

Lab ID: L2165356-04
Client ID: PB-666-11R-0.0-0.5
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 11/29/21 14:15
Date Received: 11/29/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.0		%	0.100	NA	1	-	11/30/21 13:07	121,2540G	RI

Project Name: PES REFINERY-860 RELEASE
Project Number: 200.00135.005.03

Lab Number: L2165356
Report Date: 12/08/21

SAMPLE RESULTS

Lab ID: L2165356-05
Client ID: PB-666-11R-6.0-6.5
Sample Location: PHILADELPHIA, PA

Date Collected: 11/29/21 14:20
Date Received: 11/29/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	72.0		%	0.100	NA	1	-	11/30/21 13:07	121,2540G	RI

Project Name: PES REFINERY-860 RELEASE
Project Number: 200.00135.005.03
Lab Number: L2165356
Report Date: 12/08/21

SAMPLE RESULTS

Lab ID: L2165356-07
Client ID: PB-666-29-0.0-0.5
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/29/21 15:00
Date Received: 11/29/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	69.9		%	0.100	NA	1	-	11/30/21 13:07	121,2540G	RI

Project Name: PES REFINERY-860 RELEASE
Project Number: 200.00135.005.03
Lab Number: L2165356
Report Date: 12/08/21

SAMPLE RESULTS

Lab ID: L2165356-08
Client ID: PB-666-29-3.5-4.0
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/29/21 15:05
Date Received: 11/29/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	76.7		%	0.100	NA	1	-	11/30/21 13:07	121,2540G	RI

Project Name: PES REFINERY-860 RELEASE
Project Number: 200.00135.005.03
Lab Number: L2165356
Report Date: 12/08/21

SAMPLE RESULTS

Lab ID: L2165356-09
Client ID: PB-666-29-6.0-6.5
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/29/21 15:10
Date Received: 11/29/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	69.8		%	0.100	NA	1	-	11/30/21 13:07	121,2540G	RI

Lab Duplicate Analysis

Batch Quality Control

Project Name: PES REFINERY-860 RELEASE

Project Number: 200.00135.005.03

Lab Number: L2165356

Report Date: 12/08/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-02,04-05,07-09 QC Batch ID: WG1577157-1 QC Sample: L2165356-01 Client ID: PB-666-12R-0.0-0.5						
Solids, Total	71.2	71.7	%	1		20

Project Name: PES REFINERY-860 RELEASE
Project Number: 200.00135.005.03

Lab Number: L2165356
Report Date: 12/08/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2165356-01A	Vial MeOH preserved	B	NA		3.6	Y	Absent		HOLD-8260HLW(14)
L2165356-01B	Vial water preserved	B	NA		3.6	Y	Absent	30-NOV-21 08:58	HOLD-8260HLW(14)
L2165356-01C	Vial water preserved	B	NA		3.6	Y	Absent	30-NOV-21 08:58	HOLD-8260HLW(14)
L2165356-01D	Plastic 2oz unpreserved for TS	B	NA		3.6	Y	Absent		TS(7)
L2165356-01E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.6	Y	Absent		PB-TI(180)
L2165356-01F	Glass 120ml/4oz unpreserved	B	NA		3.6	Y	Absent		PA-PAH(14)
L2165356-02A	Vial MeOH preserved	B	NA		3.6	Y	Absent		HOLD-8260HLW(14)
L2165356-02B	Vial water preserved	B	NA		3.6	Y	Absent	30-NOV-21 08:58	HOLD-8260HLW(14)
L2165356-02C	Vial water preserved	B	NA		3.6	Y	Absent	30-NOV-21 08:58	HOLD-8260HLW(14)
L2165356-02D	Plastic 2oz unpreserved for TS	B	NA		3.6	Y	Absent		TS(7)
L2165356-02E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.6	Y	Absent		PB-TI(180)
L2165356-02F	Glass 120ml/4oz unpreserved	B	NA		3.6	Y	Absent		PA-PAH(14)
L2165356-03A	Vial MeOH preserved	B	NA		3.6	Y	Absent		HOLD-8260HLW(14)
L2165356-03B	Vial water preserved	B	NA		3.6	Y	Absent	30-NOV-21 08:58	HOLD-8260HLW(14)
L2165356-03C	Vial water preserved	B	NA		3.6	Y	Absent	30-NOV-21 08:58	HOLD-8260HLW(14)
L2165356-03D	Plastic 2oz unpreserved for TS	B	NA		3.6	Y	Absent		HOLD-WETCHEM()
L2165356-03E	Glass 60mL/2oz unpreserved	B	NA		3.6	Y	Absent		HOLD-METAL(180)
L2165356-03F	Glass 120ml/4oz unpreserved	B	NA		3.6	Y	Absent		HOLD-8270(14)
L2165356-04A	Vial MeOH preserved	A	NA		5.1	Y	Absent		PA-8260HLW(14)
L2165356-04B	Vial water preserved	A	NA		5.1	Y	Absent	30-NOV-21 08:58	PA-8260HLW(14)
L2165356-04C	Vial water preserved	A	NA		5.1	Y	Absent	30-NOV-21 08:58	PA-8260HLW(14)
L2165356-04D	Plastic 2oz unpreserved for TS	A	NA		5.1	Y	Absent		TS(7)

*Values in parentheses indicate holding time in days

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2165356-04E	Glass 60mL/2oz unpreserved	A	NA		5.1	Y	Absent		ARCHIVE()
L2165356-04F	Glass 120ml/4oz unpreserved	A	NA		5.1	Y	Absent		PA-PAH(14)
L2165356-05A	Vial MeOH preserved	A	NA		5.1	Y	Absent		PA-8260HLW(14)
L2165356-05B	Vial water preserved	A	NA		5.1	Y	Absent	30-NOV-21 08:58	PA-8260HLW(14)
L2165356-05C	Vial water preserved	A	NA		5.1	Y	Absent	30-NOV-21 08:58	PA-8260HLW(14)
L2165356-05D	Plastic 2oz unpreserved for TS	A	NA		5.1	Y	Absent		TS(7)
L2165356-05E	Glass 60mL/2oz unpreserved	A	NA		5.1	Y	Absent		ARCHIVE()
L2165356-05F	Glass 120ml/4oz unpreserved	A	NA		5.1	Y	Absent		PA-PAH(14)
L2165356-06A	Vial MeOH preserved	A	NA		5.1	Y	Absent		HOLD-8260HLW(14)
L2165356-06B	Vial water preserved	A	NA		5.1	Y	Absent	30-NOV-21 08:58	HOLD-8260HLW(14)
L2165356-06C	Vial water preserved	A	NA		5.1	Y	Absent	30-NOV-21 08:58	HOLD-8260HLW(14)
L2165356-06D	Plastic 2oz unpreserved for TS	A	NA		5.1	Y	Absent		HOLD-WETCHEM()
L2165356-06E	Glass 60mL/2oz unpreserved	A	NA		5.1	Y	Absent		HOLD-8270(14)
L2165356-06F	Glass 120ml/4oz unpreserved	A	NA		5.1	Y	Absent		HOLD-8270(14)
L2165356-07A	Vial MeOH preserved	A	NA		5.1	Y	Absent		PA-8260HLW(14)
L2165356-07B	Vial water preserved	A	NA		5.1	Y	Absent	30-NOV-21 08:58	PA-8260HLW(14)
L2165356-07C	Vial water preserved	A	NA		5.1	Y	Absent	30-NOV-21 08:58	PA-8260HLW(14)
L2165356-07D	Plastic 2oz unpreserved for TS	A	NA		5.1	Y	Absent		TS(7)
L2165356-07E	Glass 60mL/2oz unpreserved	A	NA		5.1	Y	Absent		ARCHIVE()
L2165356-07F	Glass 120ml/4oz unpreserved	A	NA		5.1	Y	Absent		PA-PAH(14)
L2165356-08A	Vial MeOH preserved	A	NA		5.1	Y	Absent		PA-8260HLW(14)
L2165356-08B	Vial water preserved	A	NA		5.1	Y	Absent	30-NOV-21 08:58	PA-8260HLW(14)
L2165356-08C	Vial water preserved	A	NA		5.1	Y	Absent	30-NOV-21 08:58	PA-8260HLW(14)
L2165356-08D	Plastic 2oz unpreserved for TS	A	NA		5.1	Y	Absent		TS(7)
L2165356-08E	Glass 60mL/2oz unpreserved	A	NA		5.1	Y	Absent		ARCHIVE()
L2165356-08F	Glass 120ml/4oz unpreserved	A	NA		5.1	Y	Absent		PA-PAH(14)
L2165356-09A	Vial MeOH preserved	B	NA		3.6	Y	Absent		PA-8260HLW(14)
L2165356-09B	Vial water preserved	B	NA		3.6	Y	Absent	30-NOV-21 08:58	PA-8260HLW(14)

*Values in parentheses indicate holding time in days

Project Name: PES REFINERY-860 RELEASE
Project Number: 200.00135.005.03

Lab Number: L2165356
Report Date: 12/08/21

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2165356-09C	Vial water preserved	B	NA		3.6	Y	Absent	30-NOV-21 08:58	PA-8260HLW(14)
L2165356-09D	Plastic 2oz unpreserved for TS	B	NA		3.6	Y	Absent		TS(7)
L2165356-09E	Glass 60mL/2oz unpreserved	B	NA		3.6	Y	Absent		ARCHIVE()
L2165356-09F	Glass 120ml/4oz unpreserved	B	NA		3.6	Y	Absent		PA-PAH(14)
L2165356-10A	Vial HCl preserved	A	NA		5.1	Y	Absent		PA-8260(14)
L2165356-10B	Vial HCl preserved	A	NA		5.1	Y	Absent		PA-8260(14)
L2165356-10C	Vial HCl preserved	A	NA		5.1	Y	Absent		PA-8260(14)
L2165356-10D	Plastic 120ml unpreserved	A	7	7	5.1	Y	Absent		ARCHIVE()
L2165356-10E	Plastic 250ml HNO3 preserved	A	<2	<2	5.1	Y	Absent		PB-6020T-PPB(180)
L2165356-10F	Amber 250ml unpreserved	A	7	7	5.1	Y	Absent		PA-8270SIM-LVI(7)
L2165356-10G	Amber 250ml unpreserved	A	7	7	5.1	Y	Absent		PA-8270SIM-LVI(7)
L2165356-11A	Vial HCl preserved	B	NA		3.6	Y	Absent		PA-8260(14)
L2165356-11B	Vial HCl preserved	B	NA		3.6	Y	Absent		PA-8260(14)

*Values in parentheses indicate holding time in days

Project Name:	PES REFINERY-860 RELEASE	**Lab Number:**	L2165356
Project Number:	200.00135.005.03	**Report Date:**	12/08/21

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	PES REFINERY-860 RELEASE	**Lab Number:**	L2165356
Project Number:	200.00135.005.03	**Report Date:**	12/08/21

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	PES REFINERY-860 RELEASE	**Lab Number:**	L2165356
Project Number:	200.00135.005.03	**Report Date:**	12/08/21

Data Qualifiers

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers

Project Name:	PES REFINERY-860 RELEASE	**Lab Number:**	L2165356
Project Number:	200.00135.005.03	**Report Date:**	12/08/21

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

2

CHAIN OF CUSTODY

PAGE 1 OF 2

ALPHA ANALYTICAL

Westborough, MA
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA
TEL: 508-822-9300
FAX: 508-822-3288

Date Rec'd in Lab: 11/30/21

ALPHA Job #: L2165356

Project Information

Project Name: PES Refinery - Delineation

Project Location: Philadelphia, PA

Project #: 200.00135.005.03

Project Manager: William Schmidt

ALPHA Quote #: 13161

Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

☐ These samples have been Previously analyzed by Alpha

Report Information Data Deliverables

☐ FAX ☒ EMAIL

☒ ADEx ☐ Add'l Deliverables

Billing Information

☒ Same as Client info

PO #: 3894

Regulatory Requirements/Report Limits

State/Fed Program	Criteria
PADEP Storage Tank Sampling	

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Other Project Specific Requirements/Comments/Detection Limits:

Report only project-specific analyte list per attached

Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

ANALYSIS

SAMPLE HANDLING
Filtration
☐ Done
☒ Not Needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	Lead	Benzene	Toluene	Benzo(a)pyrene	Benzo(b)fluoranthene	Naphthalene	Sample Specific Comments
	~~PB-666-12R (0-0.5')~~	~~11/29~~										
65356-01	PB-666-12R-0.0-0.5	11/29	1320	S	TS	✓			✓	✓	✓	
02	PB-666-12R-6.0-6.5	↓	1325	↓	↓	✓			✓	✓	✓	
03	PB-666-12R-14.5-15.0	↓	1330	↓	↓	✓			✓	✓	✓	HOLD
04	PB-666-11R-0.0-0.5	↓	1415	↓	↓		✓		✓	✓		
05	PB-666-11R-6.0-6.5	↓	1420	↓	↓		✓		✓	✓		
06	PB-666-11R-14.5-15.0	↓	1430	↓	↓		✓		✓	✓		HOLD
07	PB-666-29-0.0-0.5	↓	1500	↓	↓		✓		✓	✓		
08	PB-666-29-3.5-4.0	↓	1505	↓	↓		✓		✓	✓		
09	PB-666-29-6.0-6.5	↓	1510	↓	↓		✓		✓	✓		

Container Type

Preservative

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	11/29	[signature]	11/29/21 1650
[signature]	11/29/21 1730	[signature]	11-29 1730
[signature]	11-29 2000	Paul Marcelle	11/29/21 2030
Paul Marcelle 11/30/21 0050		[signature]	11/30/21 0050

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

FORM NO: 01-01(HC) (rev. 5-JAN-12)

2

CHAIN OF CUSTODY

PAGE 2 OF 2

ALPHA ANALYTICAL

Westborough, MA
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA
TEL: 508-822-9300
FAX: 508-822-3288

Date Rec'd in Lab: 11/30/21

ALPHA Job #: L2165356

Project Information

Project Name: PES Refinery - Delineation

Project Location: Philadelphia, PA

Project #: 200.00135.005.03

Project Manager: William Schmidt

ALPHA Quote #: 13161

Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

☐ These samples have been Previously analyzed by Alpha

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Report Information Data Deliverables

☐ FAX ☒ EMAIL

☒ ADEx ☐ Add'l Deliverables

Billing Information

☒ Same as Client info

PO #: 3894

Regulatory Requirements/Report Limits

State/Fed Program	Criteria
PADEP Storage Tank Sampling	

Other Project Specific Requirements/Comments/Detection Limits:

Report only project-specific analyte list per attached

Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

ANALYSIS

SAMPLE HANDLING
Filtration
☐ Done
☒ Not Needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	Lead	Benzene	Toluene	Benzo(a)pyrene	Benzo(b)fluoranthene	Naphthalene							Sample Specific Comments	TOTAL # BOTTLES
65356-10	FB-211129	11/29	1100	BW		☑	☑	☐	☑	☑	☑	☐	☐	☐	☐	☐	☐		
11	TB-211129	11/29	–	W		☑	☑	☐	☑	☑	☑	☐	☐	☐	☐	☐	☐		

Container Type	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	11/29	[signature]	11/29/21 1630
[signature]	11/29/21 1730	[signature]	11-29 1730
[signature]	11-29 2200	Paul Mazzella	11/29/21 2200
Paul Mazzella	11/30/21 0050	[signature]	11/30/21 0050

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

FORM NO: 01-01(I)(L) (rev. 5-JAN-12)

ANALYTICAL REPORT

Lab Number:	L2165672
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PES REFINERY-860 RELEASE
Project Number:	200.00135.005.03
Report Date:	12/17/21

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: PES REFINERY-860 RELEASE
Project Number: 200.00135.005.03

Lab Number: L2165672
Report Date: 12/17/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2165672-01	PB-666-28-0.0-0.5	SOIL	PHILADELPHIA, PA	11/30/21 09:55	11/30/21
L2165672-02	PB-666-28-2.5-3.0	SOIL	PHILADELPHIA, PA	11/30/21 10:00	11/30/21
L2165672-03	PB-666-28-6.0-6.5	SOIL	PHILADELPHIA, PA	11/30/21 10:05	11/30/21
L2165672-04	PB-668-08-0.0-0.5	SOIL	PHILADELPHIA, PA	11/30/21 10:35	11/30/21
L2165672-05	PB-668-08-2.5-3.0	SOIL	PHILADELPHIA, PA	11/30/21 10:40	11/30/21
L2165672-06	PB-668-08-6.0-6.5	SOIL	PHILADELPHIA, PA	11/30/21 10:45	11/30/21
L2165672-07	PB-668-06R-0.0-0.5	SOIL	PHILADELPHIA, PA	11/30/21 11:25	11/30/21
L2165672-08	PB-668-06R-6.0-6.5	SOIL	PHILADELPHIA, PA	11/30/21 11:30	11/30/21
L2165672-09	PB-668-06R-14.5-15.0	SOIL	PHILADELPHIA, PA	11/30/21 11:35	11/30/21
L2165672-10	PB-666-27-0.0-0.5	SOIL	PHILADELPHIA, PA	11/30/21 13:05	11/30/21
L2165672-11	PB-666-27-3.5-4.0	SOIL	PHILADELPHIA, PA	11/30/21 13:10	11/30/21
L2165672-12	PB-666-27-6.0-6.5	SOIL	PHILADELPHIA, PA	11/30/21 13:15	11/30/21
L2165672-13	PB-666-26-0.0-0.5	SOIL	PHILADELPHIA, PA	11/30/21 14:00	11/30/21
L2165672-14	PB-666-26-3.5-4.0	SOIL	PHILADELPHIA, PA	11/30/21 14:05	11/30/21
L2165672-15	PB-666-26-6.0-6.5	SOIL	PHILADELPHIA, PA	11/30/21 14:10	11/30/21
L2165672-16	PB-663-15-0.0-0.5	SOIL	PHILADELPHIA, PA	11/30/21 14:50	11/30/21
L2165672-17	PB-663-15-3.0-3.5	SOIL	PHILADELPHIA, PA	11/30/21 14:55	11/30/21
L2165672-18	PB-663-15-6.0-6.5	SOIL	PHILADELPHIA, PA	11/30/21 15:00	11/30/21
L2165672-19	FB-211130-1	WATER	PHILADELPHIA, PA	11/30/21 15:30	11/30/21
L2165672-20	FB-211130-2	WATER	PHILADELPHIA, PA	11/30/21 15:35	11/30/21
L2165672-21	TB-211130	WATER	PHILADELPHIA, PA	11/30/21 00:00	11/30/21

Project Name:	PES REFINERY-860 RELEASE	**Lab Number:**	L2165672
Project Number:	200.00135.005.03	**Report Date:**	12/17/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	PES REFINERY-860 RELEASE	**Lab Number:**	L2165672
Project Number:	200.00135.005.03	**Report Date:**	12/17/21

Case Narrative (continued)

Report Submission

December 17, 2021: This final report includes the results of all requested analyses.

December 14, 2021: This is a preliminary report.

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Sample Receipt

L2165672-19 and -20: Sample containers for Archived Sample Containers were received for Solids, Total. The analysis was not performed.

Volatile Organics

L2165672-11 and -12: One or more of the internal standard recoveries is outside the acceptance criteria; however, the internal standard is within criteria for the target compounds; therefore, the results are reported.

L2165672-11: The surrogate recovery for 4-bromofluorobenzene (136%) is outside the acceptance criteria; however, since the sample was non-detect for all target analytes associated with this surrogate, re-analysis was not required.

L2165672-12: The surrogate recovery for 4-bromofluorobenzene (147%) is outside the acceptance criteria; however, since the sample was non-detect for all target analytes associated with this surrogate, re-analysis was not required.

Semivolatile Organics

L2165672-04D, -05D, -06D, -07D, -10D, -11D, and -12D: The sample has elevated detection limits due to the dilution required by the sample matrix.

L2165672-08: One or more of the internal standard recoveries is outside the acceptance criteria; however, the internal standard is within criteria for the target compounds; therefore, the results are reported.

L2165672-10D: The sample has elevated detection limits due to the limited sample volume utilized during

Project Name:	PES REFINERY-860 RELEASE	**Lab Number:**	L2165672
Project Number:	200.00135.005.03	**Report Date:**	12/17/21

Case Narrative (continued)

extraction, as required by the sample matrix.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Lisa Westerlind

Title: Technical Director/Representative Date: 12/17/21

ORGANICS

VOLATILES

Project Name: PES REFINERY-860 RELEASE **Lab Number:** L2165672

Project Number: 200.00135.005.03 **Report Date:** 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-10
Client ID: PB-666-27-0.0-0.5
Sample Location: PHILADELPHIA, PA

Date Collected: 11/30/21 13:05
Date Received: 11/30/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 12/09/21 10:52
Analyst: MKS
Percent Solids: 66%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Benzene	0.00045	J	mg/kg	0.00085	0.00028	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	91		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	128		70-130
Dibromofluoromethane	92		70-130

Project Name: PES REFINERY-860 RELEASE **Lab Number:** L2165672

Project Number: 200.00135.005.03 **Report Date:** 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-11
Client ID: PB-666-27-3.5-4.0
Sample Location: PHILADELPHIA, PA

Date Collected: 11/30/21 13:10
Date Received: 11/30/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 12/09/21 10:31
Analyst: MKS
Percent Solids: 66%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Benzene	0.0016		mg/kg	0.00075	0.00025	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	89		70-130
Toluene-d8	115		70-130
4-Bromofluorobenzene	**136**	Q	70-130
Dibromofluoromethane	93		70-130

Project Name: PES REFINERY-860 RELEASE **Lab Number:** L2165672

Project Number: 200.00135.005.03 **Report Date:** 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-12
Client ID: PB-666-27-6.0-6.5
Sample Location: PHILADELPHIA, PA

Date Collected: 11/30/21 13:15
Date Received: 11/30/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 12/09/21 11:12
Analyst: MKS
Percent Solids: 67%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Benzene	0.0039		mg/kg	0.0012	0.00040	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	87		70-130
Toluene-d8	124		70-130
4-Bromofluorobenzene	**147**	Q	70-130
Dibromofluoromethane	92		70-130

Project Name: PES REFINERY-860 RELEASE **Lab Number:** L2165672

Project Number: 200.00135.005.03 **Report Date:** 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-19
Client ID: FB-211130-1
Sample Location: PHILADELPHIA, PA

Date Collected: 11/30/21 15:30
Date Received: 11/30/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 12/06/21 11:56
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Benzene	ND		ug/l	0.50	0.16	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	112		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	108		70-130

Project Name: PES REFINERY-860 RELEASE **Lab Number:** L2165672

Project Number: 200.00135.005.03 **Report Date:** 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-20
Client ID: FB-211130-2
Sample Location: PHILADELPHIA, PA

Date Collected: 11/30/21 15:35
Date Received: 11/30/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 12/06/21 12:50
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Benzene	ND		ug/l	0.50	0.16	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	102		70-130

Project Name: PES REFINERY-860 RELEASE **Lab Number:** L2165672

Project Number: 200.00135.005.03 **Report Date:** 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-21
Client ID: TB-211130
Sample Location: PHILADELPHIA, PA

Date Collected: 11/30/21 00:00
Date Received: 11/30/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 12/04/21 14:06
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Benzene	ND		ug/l	0.50	0.16	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	112		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	105		70-130

Project Name: PES REFINERY-860 RELEASE **Lab Number:** L2165672

Project Number: 200.00135.005.03 **Report Date:** 12/17/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 12/04/21 09:30
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 21 Batch: WG1579337-5					
Benzene	ND		ug/l	0.50	0.16

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	103		70-130

Project Name: PES REFINERY-860 RELEASE **Lab Number:** L2165672

Project Number: 200.00135.005.03 **Report Date:** 12/17/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 12/06/21 09:15
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 19-20 Batch: WG1580259-5					
Benzene	ND		ug/l	0.50	0.16

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	106		70-130

Project Name: PES REFINERY-860 RELEASE **Lab Number:** L2165672

Project Number: 200.00135.005.03 **Report Date:** 12/17/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 12/09/21 06:05
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 10-12 Batch: WG1581307-5					
Benzene	ND		mg/kg	0.00050	0.00017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	84		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	85		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PES REFINERY-860 RELEASE

Project Number: 200.00135.005.03

Lab Number: L2165672

Report Date: 12/17/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 21 Batch: WG1579337-3 WG1579337-4								
Benzene	100		100		70-130	0		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	105		107		70-130
Toluene-d8	104		104		70-130
4-Bromofluorobenzene	101		101		70-130
Dibromofluoromethane	103		105		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PES REFINERY-860 RELEASE

Project Number: 200.00135.005.03

Lab Number: L2165672

Report Date: 12/17/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 19-20 Batch: WG1580259-3 WG1580259-4								
Benzene	100		110		70-130	10		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	107		109		70-130
Toluene-d8	102		97		70-130
4-Bromofluorobenzene	100		100		70-130
Dibromofluoromethane	99		103		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PES REFINERY-860 RELEASE

Project Number: 200.00135.005.03

Lab Number: L2165672

Report Date: 12/17/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 10-12 Batch: WG1581307-3 WG1581307-4								
Benzene	98		94		70-130	4		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	78		79		70-130
Toluene-d8	100		99		70-130
4-Bromofluorobenzene	97		98		70-130
Dibromofluoromethane	86		84		70-130

SEMIVOLATILES

Project Name: PES REFINERY-860 RELEASE
Lab Number: L2165672
Project Number: 200.00135.005.03
Report Date: 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-01
Client ID: PB-666-28-0.0-0.5
Sample Location: PHILADELPHIA, PA

Date Collected: 11/30/21 09:55
Date Received: 11/30/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 12/11/21 12:19
Analyst: WR
Percent Solids: 65%

Extraction Method: EPA 3546
Extraction Date: 12/10/21 14:33

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.16	J	mg/kg	0.26	0.031	1
Benzo(b)fluoranthene	1.5		mg/kg	0.15	0.043	1
Benzo(a)pyrene	1.0		mg/kg	0.20	0.062	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	91		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	78		18-120

Project Name: PES REFINERY-860 RELEASE
Lab Number: L2165672
Project Number: 200.00135.005.03
Report Date: 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-02
Client ID: PB-666-28-2.5-3.0
Sample Location: PHILADELPHIA, PA

Date Collected: 11/30/21 10:00
Date Received: 11/30/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 12/11/21 12:43
Analyst: WR
Percent Solids: 65%

Extraction Method: EPA 3546
Extraction Date: 12/10/21 14:33

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.26	0.031	1
Benzo(b)fluoranthene	ND		mg/kg	0.15	0.043	1
Benzo(a)pyrene	ND		mg/kg	0.20	0.063	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	83		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	78		18-120

Project Name: PES REFINERY-860 RELEASE
Lab Number: L2165672
Project Number: 200.00135.005.03
Report Date: 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-03
Client ID: PB-666-28-6.0-6.5
Sample Location: PHILADELPHIA, PA

Date Collected: 11/30/21 10:05
Date Received: 11/30/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 12/11/21 13:07
Analyst: WR
Percent Solids: 73%

Extraction Method: EPA 3546
Extraction Date: 12/10/21 14:33

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.23	0.028	1
Benzo(b)fluoranthene	ND		mg/kg	0.14	0.038	1
Benzo(a)pyrene	ND		mg/kg	0.18	0.056	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	95		23-120
2-Fluorobiphenyl	78		30-120
4-Terphenyl-d14	68		18-120

Project Name: PES REFINERY-860 RELEASE
Lab Number: L2165672
Project Number: 200.00135.005.03
Report Date: 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-04 D
Client ID: PB-668-08-0.0-0.5
Sample Location: PHILADELPHIA, PA

Date Collected: 11/30/21 10:35
Date Received: 11/30/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 12/13/21 16:05
Analyst: EK
Percent Solids: 51%

Extraction Method: EPA 3546
Extraction Date: 12/10/21 14:33

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.54	J	mg/kg	0.64	0.078	2
Benzo(b)fluoranthene	5.1		mg/kg	0.39	0.11	2
Benzo(a)pyrene	3.8		mg/kg	0.52	0.16	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	80		23-120
2-Fluorobiphenyl	76		30-120
4-Terphenyl-d14	76		18-120

Project Name: PES REFINERY-860 RELEASE
Lab Number: L2165672
Project Number: 200.00135.005.03
Report Date: 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-05 D
Client ID: PB-668-08-2.5-3.0
Sample Location: PHILADELPHIA, PA

Date Collected: 11/30/21 10:40
Date Received: 11/30/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 12/13/21 16:27
Analyst: EK
Percent Solids: 91%

Extraction Method: EPA 3546
Extraction Date: 12/10/21 14:33

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.32	J	mg/kg	0.36	0.043	2
Benzo(b)fluoranthene	4.9		mg/kg	0.21	0.060	2
Benzo(a)pyrene	3.7		mg/kg	0.28	0.087	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	76		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	75		18-120

Project Name: PES REFINERY-860 RELEASE
Lab Number: L2165672
Project Number: 200.00135.005.03
Report Date: 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-06 D
Client ID: PB-668-08-6.0-6.5
Sample Location: PHILADELPHIA, PA

Date Collected: 11/30/21 10:45
Date Received: 11/30/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 12/13/21 16:49
Analyst: EK
Percent Solids: 68%

Extraction Method: EPA 3546
Extraction Date: 12/10/21 14:33

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.51		mg/kg	0.49	0.060	2
Benzo(b)fluoranthene	0.24	J	mg/kg	0.29	0.083	2
Benzo(a)pyrene	ND		mg/kg	0.39	0.12	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	74		23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	67		18-120

Project Name: PES REFINERY-860 RELEASE
Lab Number: L2165672
Project Number: 200.00135.005.03
Report Date: 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-07 D
Client ID: PB-668-06R-0.0-0.5
Sample Location: PHILADELPHIA, PA

Date Collected: 11/30/21 11:25
Date Received: 11/30/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 12/13/21 17:11
Analyst: EK
Percent Solids: 66%

Extraction Method: EPA 3546
Extraction Date: 12/10/21 14:33

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.15	J	mg/kg	0.50	0.061	2
Benzo(b)fluoranthene	1.3		mg/kg	0.30	0.084	2
Benzo(a)pyrene	0.94		mg/kg	0.40	0.12	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	68		23-120
2-Fluorobiphenyl	67		30-120
4-Terphenyl-d14	66		18-120

Project Name: PES REFINERY-860 RELEASE
Lab Number: L2165672
Project Number: 200.00135.005.03
Report Date: 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-08
Client ID: PB-668-06R-6.0-6.5
Sample Location: PHILADELPHIA, PA

Date Collected: 11/30/21 11:30
Date Received: 11/30/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 12/11/21 15:08
Analyst: WR
Percent Solids: 68%

Extraction Method: EPA 3546
Extraction Date: 12/10/21 14:33

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.24	0.029	1
Benzo(b)fluoranthene	0.043	J	mg/kg	0.14	0.040	1
Benzo(a)pyrene	ND		mg/kg	0.19	0.059	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	91		18-120

Project Name: PES REFINERY-860 RELEASE
Lab Number: L2165672
Project Number: 200.00135.005.03
Report Date: 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-10 D
Client ID: PB-666-27-0.0-0.5
Sample Location: PHILADELPHIA, PA

Date Collected: 11/30/21 13:05
Date Received: 11/30/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 12/13/21 17:33
Analyst: EK
Percent Solids: 66%

Extraction Method: EPA 3546
Extraction Date: 12/10/21 14:33

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Benzo(b)fluoranthene	ND		mg/kg	0.86	0.24	2
Benzo(a)pyrene	ND		mg/kg	1.1	0.35	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	73		23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	65		18-120

Project Name: PES REFINERY-860 RELEASE
Lab Number: L2165672
Project Number: 200.00135.005.03
Report Date: 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-11 D
Client ID: PB-666-27-3.5-4.0
Sample Location: PHILADELPHIA, PA

Date Collected: 11/30/21 13:10
Date Received: 11/30/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 12/13/21 18:32
Analyst: CMM
Percent Solids: 66%

Extraction Method: EPA 3546
Extraction Date: 12/10/21 14:33

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Benzo(b)fluoranthene	0.52		mg/kg	0.30	0.083	2
Benzo(a)pyrene	0.36	J	mg/kg	0.40	0.12	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	72		23-120
2-Fluorobiphenyl	64		30-120
4-Terphenyl-d14	56		18-120

Project Name: PES REFINERY-860 RELEASE
Lab Number: L2165672
Project Number: 200.00135.005.03
Report Date: 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-12 D
Client ID: PB-666-27-6.0-6.5
Sample Location: PHILADELPHIA, PA

Date Collected: 11/30/21 13:15
Date Received: 11/30/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 12/13/21 18:10
Analyst: EK
Percent Solids: 67%

Extraction Method: EPA 3546
Extraction Date: 12/10/21 14:33

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Benzo(b)fluoranthene	1.8		mg/kg	0.30	0.084	2
Benzo(a)pyrene	1.4		mg/kg	0.40	0.12	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	72		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	62		18-120

Project Name: PES REFINERY-860 RELEASE
Lab Number: L2165672
Project Number: 200.00135.005.03
Report Date: 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-19
Client ID: FB-211130-1
Sample Location: PHILADELPHIA, PA

Date Collected: 11/30/21 15:30
Date Received: 11/30/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 12/05/21 19:40
Analyst: WR

Extraction Method: EPA 3510C
Extraction Date: 12/05/21 02:48

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	84		23-120
2-Fluorobiphenyl	79		15-120
4-Terphenyl-d14	76		41-149

Project Name: PES REFINERY-860 RELEASE
Lab Number: L2165672
Project Number: 200.00135.005.03
Report Date: 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-20
Client ID: FB-211130-2
Sample Location: PHILADELPHIA, PA

Date Collected: 11/30/21 15:35
Date Received: 11/30/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 12/05/21 19:59
Analyst: WR

Extraction Method: EPA 3510C
Extraction Date: 12/05/21 02:48

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	73		15-120
4-Terphenyl-d14	69		41-149

Project Name: PES REFINERY-860 RELEASE
Project Number: 200.00135.005.03
Lab Number: L2165672
Report Date: 12/17/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 12/05/21 15:59
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 12/04/21 11:32

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 19-20 Batch: WG1579133-1					
Naphthalene	ND		ug/l	0.10	0.05
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01
Benzo(a)pyrene	ND		ug/l	0.10	0.02

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	41		21-120
Phenol-d6	32		10-120
Nitrobenzene-d5	57		23-120
2-Fluorobiphenyl	70		15-120
2,4,6-Tribromophenol	59		10-120
4-Terphenyl-d14	72		41-149

Project Name: PES REFINERY-860 RELEASE
Project Number: 200.00135.005.03
Lab Number: L2165672
Report Date: 12/17/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 12/11/21 09:54
Analyst: WR

Extraction Method: EPA 3546
Extraction Date: 12/10/21 14:33

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-08,10-12 Batch: WG1581810-1					
Naphthalene	ND		mg/kg	0.16	0.020
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	92		23-120
2-Fluorobiphenyl	87		30-120
4-Terphenyl-d14	97		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: PES REFINERY-860 RELEASE

Project Number: 200.00135.005.03

Lab Number: L2165672

Report Date: 12/17/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 19-20 Batch: WG1579133-2 WG1579133-3								
Naphthalene	61		55		40-140	10		40
Benzo(b)fluoranthene	72		66		40-140	9		40
Benzo(a)pyrene	67		52		40-140	25		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	49		41		21-120
Phenol-d6	41		34		10-120
Nitrobenzene-d5	54		49		23-120
2-Fluorobiphenyl	65		60		15-120
2,4,6-Tribromophenol	73		60		10-120
4-Terphenyl-d14	68		61		41-149

Lab Control Sample Analysis
Batch Quality Control

Project Name: PES REFINERY-860 RELEASE
Project Number: 200.00135.005.03

Lab Number: L2165672
Report Date: 12/17/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-08,10-12 Batch: WG1581810-2 WG1581810-3								
Naphthalene	63		83		40-140	27		50
Benzo(b)fluoranthene	73		100		40-140	31		50
Benzo(a)pyrene	67		88		40-140	27		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	70		90		23-120
2-Fluorobiphenyl	69		86		30-120
4-Terphenyl-d14	74		93		18-120

METALS

Project Name: PES REFINERY-860 RELEASE
Lab Number: L2165672
Project Number: 200.00135.005.03
Report Date: 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-01
Client ID: PB-666-28-0.0-0.5
Sample Location: PHILADELPHIA, PA

Date Collected: 11/30/21 09:55
Date Received: 11/30/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 65%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	392		mg/kg	3.04	0.163	1	12/08/21 19:35	12/10/21 17:08	EPA 3050B	1,6010D	MC

Project Name: PES REFINERY-860 RELEASE
Lab Number: L2165672
Project Number: 200.00135.005.03
Report Date: 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-02
Client ID: PB-666-28-2.5-3.0
Sample Location: PHILADELPHIA, PA

Date Collected: 11/30/21 10:00
Date Received: 11/30/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 65%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	25.5		mg/kg	3.05	0.163	1	12/08/21 19:35	12/10/21 17:13	EPA 3050B	1,6010D	MC

Project Name: PES REFINERY-860 RELEASE
Lab Number: L2165672
Project Number: 200.00135.005.03
Report Date: 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-03
Client ID: PB-666-28-6.0-6.5
Sample Location: PHILADELPHIA, PA

Date Collected: 11/30/21 10:05
Date Received: 11/30/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 73%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	34.7		mg/kg	2.73	0.146	1	12/08/21 19:35	12/10/21 17:52	EPA 3050B	1,6010D	MC

Project Name: PES REFINERY-860 RELEASE
Lab Number: L2165672
Project Number: 200.00135.005.03
Report Date: 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-13
Client ID: PB-666-26-0.0-0.5
Sample Location: PHILADELPHIA, PA

Date Collected: 11/30/21 14:00
Date Received: 11/30/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 72%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	21.7		mg/kg	2.65	0.142	1	12/08/21 19:35	12/10/21 17:56	EPA 3050B	1,6010D	MC

Project Name: PES REFINERY-860 RELEASE **Lab Number:** L2165672

Project Number: 200.00135.005.03 **Report Date:** 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-14 Date Collected: 11/30/21 14:05

Client ID: PB-666-26-3.5-4.0 Date Received: 11/30/21

Sample Location: PHILADELPHIA, PA Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 70%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	141		mg/kg	2.76	0.148	1	12/08/21 19:35	12/10/21 18:01	EPA 3050B	1,6010D	MC

Project Name: PES REFINERY-860 RELEASE
Lab Number: L2165672
Project Number: 200.00135.005.03
Report Date: 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-15
Client ID: PB-666-26-6.0-6.5
Sample Location: PHILADELPHIA, PA

Date Collected: 11/30/21 14:10
Date Received: 11/30/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 70%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	21.9		mg/kg	2.86	0.154	1	12/08/21 19:35	12/10/21 18:06	EPA 3050B	1,6010D	MC

Project Name: PES REFINERY-860 RELEASE
Lab Number: L2165672
Project Number: 200.00135.005.03
Report Date: 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-16
Client ID: PB-663-15-0.0-0.5
Sample Location: PHILADELPHIA, PA

Date Collected: 11/30/21 14:50
Date Received: 11/30/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 74%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	785		mg/kg	2.55	0.137	1	12/08/21 19:35	12/10/21 18:11	EPA 3050B	1,6010D	MC

Project Name: PES REFINERY-860 RELEASE
Lab Number: L2165672
Project Number: 200.00135.005.03
Report Date: 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-17
Client ID: PB-663-15-3.0-3.5
Sample Location: PHILADELPHIA, PA

Date Collected: 11/30/21 14:55
Date Received: 11/30/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	834		mg/kg	2.46	0.132	1	12/08/21 19:35	12/10/21 18:15	EPA 3050B	1,6010D	MC

Project Name: PES REFINERY-860 RELEASE
Lab Number: L2165672
Project Number: 200.00135.005.03
Report Date: 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-18
Client ID: PB-663-15-6.0-6.5
Sample Location: PHILADELPHIA, PA

Date Collected: 11/30/21 15:00
Date Received: 11/30/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1060		mg/kg	2.40	0.129	1	12/08/21 19:35	12/10/21 18:20	EPA 3050B	1,6010D	MC

Project Name: PES REFINERY-860 RELEASE
Lab Number: L2165672
Project Number: 200.00135.005.03
Report Date: 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-19
Client ID: FB-211130-1
Sample Location: PHILADELPHIA, PA
Date Collected: 11/30/21 15:30
Date Received: 11/30/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	12/08/21 04:44	12/08/21 13:39	EPA 3005A	1,6020B	CD

Project Name: PES REFINERY-860 RELEASE
Lab Number: L2165672
Project Number: 200.00135.005.03
Report Date: 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-20
Client ID: FB-211130-2
Sample Location: PHILADELPHIA, PA
Date Collected: 11/30/21 15:35
Date Received: 11/30/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	12/08/21 04:44	12/08/21 13:44	EPA 3005A	1,6020B	CD

Project Name: PES REFINERY-860 RELEASE **Lab Number:** L2165672

Project Number: 200.00135.005.03 **Report Date:** 12/17/21

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 19-20 Batch: WG1580442-1										
Lead, Total	ND		ug/l	1.000	0.3430	1	12/08/21 04:44	12/08/21 10:16	1,6020B	CD

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-03,13-18 Batch: WG1580800-1										
Lead, Total	ND		mg/kg	2.00	0.107	1	12/08/21 19:35	12/10/21 16:54	1,6010D	MC

Prep Information

Digestion Method: EPA 3050B

Lab Control Sample Analysis

Batch Quality Control

Project Name: PES REFINERY-860 RELEASE

Project Number: 200.00135.005.03

Lab Number: L2165672

Report Date: 12/17/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 19-20 Batch: WG1580442-2								
Lead, Total	95		-		80-120	-		
Total Metals - Mansfield Lab Associated sample(s): 01-03,13-18 Batch: WG1580800-2 SRM Lot Number: D109-540								
Lead, Total	94		-		72-128	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: PES REFINERY-860 RELEASE
Project Number: 200.00135.005.03

Lab Number: L2165672
Report Date: 12/17/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 19-20 QC Batch ID: WG1580442-3 QC Sample: L2165938-01 Client ID: MS Sample												
Lead, Total	5.346	530	514.6	96		-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 01-03,13-18 QC Batch ID: WG1580800-3 QC Sample: L2166798-01 Client ID: MS Sample												
Lead, Total	111	52.1	138	**52**	Q	-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PES REFINERY-860 RELEASE

Project Number: 200.00135.005.03

Lab Number: L2165672

Report Date: 12/17/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-03,13-18 QC Batch ID: WG1580800-4 QC Sample: L2166798-01 Client ID: DUP Sample						
Lead, Total	111	121	mg/kg	9		20

Project Name: PES REFINERY-860 RELEASE
Project Number: 200.00135.005.03

Lab Serial Dilution Analysis
Batch Quality Control

Lab Number: L2165672
Report Date: 12/17/21

Parameter	Native Sample	Serial Dilution	Units	% D	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-03,13-18 QC Batch ID: WG1580800-6 QC Sample: L2166798-01 Client ID: DUP Sample						
Lead, Total	111	132	mg/kg	19		20

INORGANICS
&
MISCELLANEOUS

Project Name: PES REFINERY-860 RELEASE
Project Number: 200.00135.005.03
Lab Number: L2165672
Report Date: 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-01
Client ID: PB-666-28-0.0-0.5
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/30/21 09:55
Date Received: 11/30/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	64.8		%	0.100	NA	1	-	12/02/21 08:13	121,2540G	RI

Project Name: PES REFINERY-860 RELEASE
Project Number: 200.00135.005.03
Lab Number: L2165672
Report Date: 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-02
Client ID: PB-666-28-2.5-3.0
Sample Location: PHILADELPHIA, PA

Date Collected: 11/30/21 10:00
Date Received: 11/30/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	64.6		%	0.100	NA	1	-	12/02/21 08:13	121,2540G	RI

Project Name: PES REFINERY-860 RELEASE
Project Number: 200.00135.005.03
Lab Number: L2165672
Report Date: 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-03
Client ID: PB-666-28-6.0-6.5
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 11/30/21 10:05
Date Received: 11/30/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	72.6		%	0.100	NA	1	-	12/02/21 08:13	121,2540G	RI

Project Name: PES REFINERY-860 RELEASE
Project Number: 200.00135.005.03
Lab Number: L2165672
Report Date: 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-04
Client ID: PB-668-08-0.0-0.5
Sample Location: PHILADELPHIA, PA

Date Collected: 11/30/21 10:35
Date Received: 11/30/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	51.1		%	0.100	NA	1	-	12/02/21 08:13	121,2540G	RI

Project Name: PES REFINERY-860 RELEASE
Project Number: 200.00135.005.03
Lab Number: L2165672
Report Date: 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-05
Client ID: PB-668-08-2.5-3.0
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 11/30/21 10:40
Date Received: 11/30/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	90.8		%	0.100	NA	1	-	12/02/21 08:13	121,2540G	RI

Project Name: PES REFINERY-860 RELEASE
Project Number: 200.00135.005.03
Lab Number: L2165672
Report Date: 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-06
Client ID: PB-668-08-6.0-6.5
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 11/30/21 10:45
Date Received: 11/30/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	67.7		%	0.100	NA	1	-	12/02/21 08:13	121,2540G	RI

Project Name: PES REFINERY-860 RELEASE
Lab Number: L2165672
Project Number: 200.00135.005.03
Report Date: 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-07
Client ID: PB-668-06R-0.0-0.5
Sample Location: PHILADELPHIA, PA

Date Collected: 11/30/21 11:25
Date Received: 11/30/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	65.9		%	0.100	NA	1	-	12/02/21 08:13	121,2540G	RI

Project Name: PES REFINERY-860 RELEASE
Project Number: 200.00135.005.03
Lab Number: L2165672
Report Date: 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-08
Client ID: PB-668-06R-6.0-6.5
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 11/30/21 11:30
Date Received: 11/30/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	67.5		%	0.100	NA	1	-	12/02/21 08:13	121,2540G	RI

Project Name: PES REFINERY-860 RELEASE
Project Number: 200.00135.005.03
Lab Number: L2165672
Report Date: 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-10
Client ID: PB-666-27-0.0-0.5
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/30/21 13:05
Date Received: 11/30/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	66.0		%	0.100	NA	1	-	12/02/21 08:13	121,2540G	RI

Project Name: PES REFINERY-860 RELEASE
Lab Number: L2165672
Project Number: 200.00135.005.03
Report Date: 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-11
Client ID: PB-666-27-3.5-4.0
Sample Location: PHILADELPHIA, PA

Date Collected: 11/30/21 13:10
Date Received: 11/30/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	65.9		%	0.100	NA	1	-	12/02/21 08:13	121,2540G	RI

Project Name: PES REFINERY-860 RELEASE
Project Number: 200.00135.005.03
Lab Number: L2165672
Report Date: 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-12
Client ID: PB-666-27-6.0-6.5
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/30/21 13:15
Date Received: 11/30/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	66.6		%	0.100	NA	1	-	12/02/21 08:13	121,2540G	RI

Project Name: PES REFINERY-860 RELEASE
Lab Number: L2165672
Project Number: 200.00135.005.03
Report Date: 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-13
Client ID: PB-666-26-0.0-0.5
Sample Location: PHILADELPHIA, PA

Date Collected: 11/30/21 14:00
Date Received: 11/30/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	71.5		%	0.100	NA	1	-	12/02/21 12:41	121,2540G	RI

Project Name: PES REFINERY-860 RELEASE
Project Number: 200.00135.005.03
Lab Number: L2165672
Report Date: 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-14
Client ID: PB-666-26-3.5-4.0
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 11/30/21 14:05
Date Received: 11/30/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	70.1		%	0.100	NA	1	-	12/02/21 12:41	121,2540G	RI

Project Name: PES REFINERY-860 RELEASE
Project Number: 200.00135.005.03
Lab Number: L2165672
Report Date: 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-15
Client ID: PB-666-26-6.0-6.5
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 11/30/21 14:10
Date Received: 11/30/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	69.8		%	0.100	NA	1	-	12/02/21 12:41	121,2540G	RI

Project Name: PES REFINERY-860 RELEASE
Lab Number: L2165672
Project Number: 200.00135.005.03
Report Date: 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-16
Client ID: PB-663-15-0.0-0.5
Sample Location: PHILADELPHIA, PA

Date Collected: 11/30/21 14:50
Date Received: 11/30/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	74.4		%	0.100	NA	1	-	12/02/21 12:41	121,2540G	RI

Project Name: PES REFINERY-860 RELEASE
Project Number: 200.00135.005.03
Lab Number: L2165672
Report Date: 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-17
Client ID: PB-663-15-3.0-3.5
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 11/30/21 14:55
Date Received: 11/30/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.8		%	0.100	NA	1	-	12/02/21 12:41	121,2540G	RI

Project Name: PES REFINERY-860 RELEASE
Project Number: 200.00135.005.03
Lab Number: L2165672
Report Date: 12/17/21

SAMPLE RESULTS

Lab ID: L2165672-18
Client ID: PB-663-15-6.0-6.5
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/30/21 15:00
Date Received: 11/30/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.9		%	0.100	NA	1	-	12/02/21 12:41	121,2540G	RI

Lab Duplicate Analysis

Batch Quality Control

Project Name: PES REFINERY-860 RELEASE

Project Number: 200.00135.005.03

Lab Number: L2165672

Report Date: 12/17/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-08,10-12 QC Batch ID: WG1578040-1 QC Sample: L2165440-01 Client ID: DUP Sample						
Solids, Total	86.4	85.9	%	1		20
General Chemistry - Westborough Lab Associated sample(s): 13-18 QC Batch ID: WG1578271-1 QC Sample: L2165522-01 Client ID: DUP Sample						
Solids, Total	64.9	62.8	%	3		20

Project Name: PES REFINERY-860 RELEASE
Project Number: 200.00135.005.03

Lab Number: L2165672
Report Date: 12/17/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent
C	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2165672-01A	Vial MeOH preserved	A	NA		2.6	Y	Absent		HOLD-8260HLW(14)
L2165672-01B	Vial water preserved	A	NA		2.6	Y	Absent	01-DEC-21 14:46	HOLD-8260HLW(14)
L2165672-01C	Vial water preserved	A	NA		2.6	Y	Absent	01-DEC-21 14:46	HOLD-8260HLW(14)
L2165672-01D	Plastic 2oz unpreserved for TS	A	NA		2.6	Y	Absent		TS(7)
L2165672-01E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.6	Y	Absent		PB-TI(180)
L2165672-01F	Glass 250ml/8oz unpreserved	A	NA		2.6	Y	Absent		PA-PAH(14)
L2165672-02A	Vial MeOH preserved	B	NA		2.8	Y	Absent		HOLD-8260HLW(14)
L2165672-02B	Vial water preserved	B	NA		2.8	Y	Absent	01-DEC-21 14:46	HOLD-8260HLW(14)
L2165672-02C	Vial water preserved	B	NA		2.8	Y	Absent	01-DEC-21 14:46	HOLD-8260HLW(14)
L2165672-02D	Plastic 2oz unpreserved for TS	B	NA		2.8	Y	Absent		TS(7)
L2165672-02E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.8	Y	Absent		PB-TI(180)
L2165672-02F	Glass 120ml/4oz unpreserved	B	NA		2.8	Y	Absent		PA-PAH(14)
L2165672-03A	Vial MeOH preserved	B	NA		2.8	Y	Absent		HOLD-8260HLW(14)
L2165672-03B	Vial water preserved	B	NA		2.8	Y	Absent	01-DEC-21 14:46	HOLD-8260HLW(14)
L2165672-03C	Vial water preserved	B	NA		2.8	Y	Absent	01-DEC-21 14:46	HOLD-8260HLW(14)
L2165672-03D	Plastic 2oz unpreserved for TS	B	NA		2.8	Y	Absent		TS(7)
L2165672-03E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.8	Y	Absent		PB-TI(180)
L2165672-03F	Glass 120ml/4oz unpreserved	B	NA		2.8	Y	Absent		PA-PAH(14)
L2165672-04A	Vial MeOH preserved	B	NA		2.8	Y	Absent		HOLD-8260HLW(14)
L2165672-04B	Vial water preserved	B	NA		2.8	Y	Absent	01-DEC-21 14:46	HOLD-8260HLW(14)
L2165672-04C	Vial water preserved	B	NA		2.8	Y	Absent	01-DEC-21 14:46	HOLD-8260HLW(14)

*Values in parentheses indicate holding time in days

Project Name: PES REFINERY-860 RELEASE
Project Number: 200.00135.005.03

Lab Number: L2165672
Report Date: 12/17/21

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2165672-04D	Plastic 2oz unpreserved for TS	B	NA		2.8	Y	Absent		TS(7)
L2165672-04E	Glass 60mL/2oz unpreserved	B	NA		2.8	Y	Absent		PA-PAH(14)
L2165672-04F	Glass 120ml/4oz unpreserved	B	NA		2.8	Y	Absent		PA-PAH(14)
L2165672-05A	Vial MeOH preserved	B	NA		2.8	Y	Absent		HOLD-8260HLW(14)
L2165672-05B	Vial water preserved	B	NA		2.8	Y	Absent	01-DEC-21 14:46	HOLD-8260HLW(14)
L2165672-05C	Vial water preserved	B	NA		2.8	Y	Absent	01-DEC-21 14:46	HOLD-8260HLW(14)
L2165672-05D	Plastic 2oz unpreserved for TS	B	NA		2.8	Y	Absent		TS(7)
L2165672-05E	Glass 60mL/2oz unpreserved	B	NA		2.8	Y	Absent		PA-PAH(14)
L2165672-05F	Glass 120ml/4oz unpreserved	B	NA		2.8	Y	Absent		PA-PAH(14)
L2165672-06A	Vial MeOH preserved	A	NA		2.6	Y	Absent		HOLD-8260HLW(14)
L2165672-06B	Vial water preserved	A	NA		2.6	Y	Absent	01-DEC-21 14:46	HOLD-8260HLW(14)
L2165672-06C	Vial water preserved	A	NA		2.6	Y	Absent	01-DEC-21 14:46	HOLD-8260HLW(14)
L2165672-06D	Plastic 2oz unpreserved for TS	A	NA		2.6	Y	Absent		TS(7)
L2165672-06E	Glass 60mL/2oz unpreserved	A	NA		2.6	Y	Absent		PA-PAH(14)
L2165672-06F	Glass 120ml/4oz unpreserved	A	NA		2.6	Y	Absent		PA-PAH(14)
L2165672-07A	Vial MeOH preserved	A	NA		2.6	Y	Absent		HOLD-8260HLW(14)
L2165672-07B	Vial water preserved	A	NA		2.6	Y	Absent	01-DEC-21 14:46	HOLD-8260HLW(14)
L2165672-07C	Vial water preserved	A	NA		2.6	Y	Absent	01-DEC-21 14:46	HOLD-8260HLW(14)
L2165672-07D	Plastic 2oz unpreserved for TS	A	NA		2.6	Y	Absent		TS(7)
L2165672-07E	Glass 60mL/2oz unpreserved	A	NA		2.6	Y	Absent		PA-PAH(14)
L2165672-07F	Glass 120ml/4oz unpreserved	A	NA		2.6	Y	Absent		PA-PAH(14)
L2165672-08A	Vial MeOH preserved	A	NA		2.6	Y	Absent		HOLD-8260HLW(14)
L2165672-08B	Vial water preserved	A	NA		2.6	Y	Absent	01-DEC-21 14:46	HOLD-8260HLW(14)
L2165672-08C	Vial water preserved	A	NA		2.6	Y	Absent	01-DEC-21 14:46	HOLD-8260HLW(14)
L2165672-08D	Plastic 2oz unpreserved for TS	A	NA		2.6	Y	Absent		TS(7)
L2165672-08E	Glass 60mL/2oz unpreserved	A	NA		2.6	Y	Absent		PA-PAH(14)
L2165672-08F	Glass 250ml/8oz unpreserved	A	NA		2.6	Y	Absent		PA-PAH(14)
L2165672-09A	Vial MeOH preserved	A	NA		2.6	Y	Absent		HOLD-8260HLW(14)

*Values in parentheses indicate holding time in days

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2165672-09B	Vial water preserved	A	NA		2.6	Y	Absent	01-DEC-21 14:46	HOLD-8260HLW(14)
L2165672-09C	Vial water preserved	A	NA		2.6	Y	Absent	01-DEC-21 14:46	HOLD-8260HLW(14)
L2165672-09D	Plastic 2oz unpreserved for TS	A	NA		2.6	Y	Absent		HOLD-WETCHEM()
L2165672-09E	Glass 60mL/2oz unpreserved	A	NA		2.6	Y	Absent		-
L2165672-09F	Glass 120ml/4oz unpreserved	A	NA		2.6	Y	Absent		S-EXT-8270(14)
L2165672-10A	Vial MeOH preserved	C	NA		5.1	Y	Absent		PA-8260HLW(14)
L2165672-10B	Vial water preserved	C	NA		5.1	Y	Absent	01-DEC-21 14:46	PA-8260HLW(14)
L2165672-10C	Vial water preserved	C	NA		5.1	Y	Absent	01-DEC-21 14:46	PA-8260HLW(14)
L2165672-10D	Plastic 2oz unpreserved for TS	C	NA		5.1	Y	Absent		TS(7)
L2165672-10E	Glass 60mL/2oz unpreserved	C	NA		5.1	Y	Absent		PA-PAH(14)
L2165672-10F	Glass 120ml/4oz unpreserved	C	NA		5.1	Y	Absent		PA-PAH(14)
L2165672-11A	Vial MeOH preserved	C	NA		5.1	Y	Absent		PA-8260HLW(14)
L2165672-11B	Vial water preserved	C	NA		5.1	Y	Absent	01-DEC-21 14:46	PA-8260HLW(14)
L2165672-11C	Vial water preserved	C	NA		5.1	Y	Absent	01-DEC-21 14:46	PA-8260HLW(14)
L2165672-11D	Plastic 2oz unpreserved for TS	C	NA		5.1	Y	Absent		TS(7)
L2165672-11E	Plastic 2oz unpreserved for TS	C	NA		5.1	Y	Absent		PA-PAH(14)
L2165672-11F	Glass 120ml/4oz unpreserved	C	NA		5.1	Y	Absent		PA-PAH(14)
L2165672-12A	Vial MeOH preserved	C	NA		5.1	Y	Absent		PA-8260HLW(14)
L2165672-12B	Vial water preserved	C	NA		5.1	Y	Absent	01-DEC-21 14:46	PA-8260HLW(14)
L2165672-12C	Vial water preserved	C	NA		5.1	Y	Absent	01-DEC-21 14:46	PA-8260HLW(14)
L2165672-12D	Plastic 2oz unpreserved for TS	C	NA		5.1	Y	Absent		TS(7)
L2165672-12E	Plastic 2oz unpreserved for TS	C	NA		5.1	Y	Absent		PA-PAH(14)
L2165672-12F	Glass 120ml/4oz unpreserved	C	NA		5.1	Y	Absent		PA-PAH(14)
L2165672-13A	Glass 60ml unpreserved split	B	NA		2.8	Y	Absent		PB-TI(180)
L2165672-13B	Glass 60mL/2oz unpreserved	B	NA		2.8	Y	Absent		TS(7)
L2165672-14A	Glass 60ml unpreserved split	B	NA		2.8	Y	Absent		PB-TI(180)
L2165672-14B	Glass 60mL/2oz unpreserved	B	NA		2.8	Y	Absent		TS(7)
L2165672-15A	Glass 60ml unpreserved split	B	NA		2.8	Y	Absent		PB-TI(180)

*Values in parentheses indicate holding time in days

Project Name: PES REFINERY-860 RELEASE
Project Number: 200.00135.005.03

Lab Number: L2165672
Report Date: 12/17/21

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2165672-15B	Glass 60mL/2oz unpreserved	B	NA		2.8	Y	Absent		TS(7)
L2165672-16A	Glass 60ml unpreserved split	C	NA		5.1	Y	Absent		PB-TI(180)
L2165672-16B	Glass 60mL/2oz unpreserved	C	NA		5.1	Y	Absent		TS(7)
L2165672-17A	Glass 60ml unpreserved split	C	NA		5.1	Y	Absent		PB-TI(180)
L2165672-17B	Glass 60mL/2oz unpreserved	C	NA		5.1	Y	Absent		TS(7)
L2165672-18A	Glass 60ml unpreserved split	C	NA		5.1	Y	Absent		PB-TI(180)
L2165672-18B	Glass 60mL/2oz unpreserved	C	NA		5.1	Y	Absent		TS(7)
L2165672-19A	Vial HCl preserved	C	NA		5.1	Y	Absent		PA-8260(14)
L2165672-19B	Vial HCl preserved	C	NA		5.1	Y	Absent		PA-8260(14)
L2165672-19C	Vial HCl preserved	C	NA		5.1	Y	Absent		PA-8260(14)
L2165672-19D	Plastic 250ml HNO3 preserved	C	<2	<2	5.1	Y	Absent		PB-6020T-PPB(180)
L2165672-19E	Amber 250ml unpreserved	C	7	7	5.1	Y	Absent		PA-8270SIM-LVI(7)
L2165672-19F	Amber 250ml unpreserved	C	7	7	5.1	Y	Absent		PA-8270SIM-LVI(7)
L2165672-19G	Plastic 60ml unpreserved	C	7	7	5.1	Y	Absent		ARCHIVE()
L2165672-20A	Vial HCl preserved	C	NA		5.1	Y	Absent		PA-8260(14)
L2165672-20B	Vial HCl preserved	C	NA		5.1	Y	Absent		PA-8260(14)
L2165672-20C	Vial HCl preserved	C	NA		5.1	Y	Absent		PA-8260(14)
L2165672-20D	Plastic 250ml HNO3 preserved	C	<2	<2	5.1	Y	Absent		PB-6020T-PPB(180)
L2165672-20E	Amber 250ml unpreserved	C	7	7	5.1	Y	Absent		PA-8270SIM-LVI(7)
L2165672-20F	Amber 250ml unpreserved	C	7	7	5.1	Y	Absent		PA-8270SIM-LVI(7)
L2165672-20G	Plastic 60ml unpreserved	C	7	7	5.1	Y	Absent		ARCHIVE()
L2165672-21A	Vial HCl preserved	B	NA		2.8	Y	Absent		PA-8260(14)
L2165672-21B	Vial HCl preserved	B	NA		2.8	Y	Absent		PA-8260(14)

*Values in parentheses indicate holding time in days

Project Name:	PES REFINERY-860 RELEASE	**Lab Number:**	L2165672
Project Number:	200.00135.005.03	**Report Date:**	12/17/21

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	PES REFINERY-860 RELEASE	**Lab Number:**	L2165672
Project Number:	200.00135.005.03	**Report Date:**	12/17/21

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	PES REFINERY-860 RELEASE	**Lab Number:**	L2165672
Project Number:	200.00135.005.03	**Report Date:**	12/17/21

Data Qualifiers

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name:	PES REFINERY-860 RELEASE	**Lab Number:**	L2165672
Project Number:	200.00135.005.03	**Report Date:**	12/17/21

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 3

ALPHA ANALYTICAL

Westborough, MA TEL: 508-898-9220 FAX: 508-898-9193
Mansfield, MA TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 12/1/21

ALPHA Job #: L2165672

Project Information

Project Name: PES Refinery - Delineation

Project Location: Philadelphia, PA

Project #: 200.00135.005.03

Project Manager: William Schmidt

ALPHA Quote #: 13161

Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

☐ These samples have been Previously analyzed by Alpha

Report Information Data Deliverables

☐ FAX ☒ EMAIL

☒ ADEx ☐ Add'l Deliverables

Billing Information

☒ Same as Client info

PO #: 3894

Regulatory Requirements/Report Limits

State/Fed Program	Criteria
PADEP Storage Tank Sampling	

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Other Project Specific Requirements/Comments/Detection Limits:

Report only project-specific analyte list ~~per attached~~ TS

Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

ANALYSIS

SAMPLE HANDLING
Filtration
☐ Done
☒ Not Needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	Lead	Benzene	Toluene	Benzo(a)pyrene	Benzo(b)fluoranthene	Naphthalene	Sample Specific Comments	TOTAL # BOTTLES
65672-01	PB-666-28-0.0-0.5	11/30	0955	S	TS	☑	☐	☐	☑	☑	☑	Dispose Terracore	2
-02	PB-666-28-2.5-3.0		1000	S	TS	☑	☐	☐	☑	☑	☑	Dispose Terracore	2
-03	PB-666-28-6.0-6.5		1005	S	TS	☑	☐	☐	☑	☑	☑	Dispose Terracore	2
-04	PB-668-08-0.0-0.5		1035	S	TS	☐	☐	☐	☑	☑	☑	Dispose Terracore	1
-05	PB-668-08-2.5-3.0		1040	S	TS	☐	☐	☐	☑	☑	☑	Dispose Terracore	1
-06	PB-668-08-6.0-6.5		1045	S	TS	☐	☐	☐	☑	☑	☑	Dispose Terracore	1
-07	PB-668-06R-0.0-0.5		1125	S	TS	☐	☐	☐	☑	☑	☑	Dispose Terra	1
-08	PB-668-06R-6.0-6.5		1130	S	TS	☐	☐	☐	☑	☑	☑	Dispose Terra	1
-09	PB-668-06R-14.5-15.0		1135	S	TS	☐	☐	☐	☑	☑	☑	HOLD	1
-10	PB-666-27-0.0-0.5	↓	1305	S	TS	☐	☑	☐	☑	☑	☐		5
					Container Type	2oz	Terracore	-	4oz	4oz	4oz		
					Preservative	-	HCL	-	-	-	-		

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	11/30	[signature]	11/30/21 1550
[signature]	11/30/21 1730	[signature]	11-30 1730
[signature]	11-30 2000	Paul Mazzella	11/30/21 2030
Paul Mazzella	12/1/21 0135	[signature]	12/1/21 0135

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

FORM NO: 01-01(I)(rev) (rev. 5-JAN-12)

CHAIN OF CUSTODY

PAGE 2 OF 3

ALPHA ANALYTICAL

Date Rec'd in Lab: 12/1/21

ALPHA Job #: L2165672

Westborough, MA TEL: 508-898-9220 FAX: 508-898-9193
Mansfield, MA TEL: 508-822-9300 FAX: 508-822-3288

Project Information

Project Name: PES Refinery - Delineation

Project Location: Philadelphia, PA

Project #: 200.00135.005.03

Project Manager: William Schmidt

ALPHA Quote #: 13161

Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

☐ These samples have been Previously analyzed by Alpha

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Report Information Data Deliverables

☐ FAX ☒ EMAIL

☒ ADEx ☐ Add'l Deliverables

Billing Information

☒ Same as Client info PO #: 3894

Regulatory Requirements/Report Limits

State/Fed Program	Criteria
PADEP Storage Tank Sampling	

Other Project Specific Requirements/Comments/Detection Limits:

Report only project-specific analyte list ~~per attached~~ TS

Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

ANALYSIS

SAMPLE HANDLING
Filtration
☐ Done
☒ Not Needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	Lead	Benzene	Toluene	Benzo(a)pyrene	Benzo(b)fluoranthene	Naphthalene	Sample Specific Comments	TOTAL # BOTTLES
~~65~~	~~PB-666-27-6.0-6.5~~	~~11/30~~	~~1310~~	~~S~~	~~TS~~		~~✓~~		~~✓~~	~~✓~~			
65672-11	PB-666-27-3.5-4.0	11/30	1310	S	TS		✓		✓	✓			5
-12	PB-666-27-6.0-6.5		1315	S	TS		✓		✓	✓			5
-13	PB-666-26-0.0-0.5		1400	S	TS	✓							1
-14	PB-666-26-3.5-4.0		1405	S	TS	✓							1
-15	PB-666-26-6.0-6.5		1410	S	TS	✓							1
-16	PB-663-15-0.0-0.5		1450	S	TS	✓							1
-17	PB-663-15-3.0-3.5		1455	S	TS	✓							1
-18	PB-663-15-6.0-6.5		1500	S	TS	✓							1
-19	FB-211130-1		1530	W	TS	✓	✓		✓	✓	✓		7

	Lead	Benzene	Toluene	Benzo(a)pyrene	Benzo(b)fluoranthene	Naphthalene
Container Type	2.?	TerraCore	-	4oz	4oz	4oz
Preservative	-	HCl	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	11/30	[signature]	11/30/21 1850
[signature] AAL	11/30/21 1730	[signature]	11/30/21 1730
[signature]	11/30/21	Paul Mazzella	11/30/21 2030
Paul Mazzella	12/1/21 0135		12/1/21 0135

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

FORM NO: 01-01(I)(ALI) (rev. 9-JAN-12)

CHAIN OF COUSTODY

PAGE 3 OF 3

ALPHA ANALYTICAL

Date Rec'd in Lab: 12/1/21

ALPHA Job #: L2165672

Westborough, MA TEL: 508-898-9220 FAX: 508-898-9193
Mansfield, MA TEL: 508-822-9300 FAX: 508-822-3288

Project Information

Project Name: PES Refinery - Delineation

Project Location: Philadelphia, PA

Project #: 200.00135.005.03

Project Manager: William Schmidt

ALPHA Quote #: 13161

Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

☐ These samples have been Previously analyzed by Alpha

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Report Information Data Deliverables

☐ FAX ☒ EMAIL

☒ ADEx ☐ Add'l Deliverables

Billing Information

☒ Same as Client info

PO #: 3894

Regulatory Requirements/Report Limits

State/Fed Program	Criteria
PADEP Storage Tank Sampling	

Other Project Specific Requirements/Comments/Detection Limits:

Report only project-specific analyte list per ~~attached~~ TS

Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

ANALYSIS

SAMPLE HANDLING
Filtration
☐ Done
☒ Not Needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	Lead	Benzene	Toluene	Benzo(a)pyrene	Benzo(b)fluoranthene	Naphthalene							Sample Specific Comments	TOTAL # BOTTLES
65672-20	FB-211130-2	11/30	1535	W	TS	☑	☑	☐	☑	☑	☑	☐	☐	☐	☐	☐	☐		7
-21	TB-211130	11/30	-	W	TS	☑	☑	☐	☑	☑	☑	☐	☐	☐	☐	☐	☐		2
																			-
Container Type						-	-	-	-	-	-	-	-	-	-	-	-		
Preservative						-	-	-	-	-	-	-	-	-	-	-	-		

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	11/30	[signature]	11/30/21 1550
[signature]	11/30/21 1750	[signature]	11-30-21 1750
[signature] 11-30 2000		Paul Mazzella	11/30/21 2030
Paul Mazzella	12/1/21 0135	[signature]	12/1/21 0135

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

FORM NO: 01-01(I) (rev. 5-JAN-18)

ANALYTICAL REPORT

Lab Number:	L2165918
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PES REFINERY-DELINEATION
Project Number:	200.00135.005.03
Report Date:	12/23/21

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: PES REFINERY-DELINEATION
Project Number: 200.00135.005.03

Lab Number: L2165918
Report Date: 12/23/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2165918-01	PB-666-21R-0.0-0.5	SOIL	PHILADELPHIA, PA	12/01/21 09:15	12/01/21
L2165918-02	PB-666-21R-6.0-6.5	SOIL	PHILADELPHIA, PA	12/01/21 09:20	12/01/21
L2165918-03	PB-666-21R-14.5-15.0	SOIL	PHILADELPHIA, PA	12/01/21 09:25	12/01/21
L2165918-04	PB-666-20R-0.0-0.5	SOIL	PHILADELPHIA, PA	12/01/21 09:50	12/01/21
L2165918-05	PB-666-20R-6.0-6.5	SOIL	PHILADELPHIA, PA	12/01/21 09:55	12/01/21
L2165918-06	PB-666-20R-14.5-15.0	SOIL	PHILADELPHIA, PA	12/01/21 10:00	12/01/21
L2165918-07	PB-663-16-0.0-0.5	SOIL	PHILADELPHIA, PA	12/01/21 10:40	12/01/21
L2165918-08	PB-663-16-3.0-3.5	SOIL	PHILADELPHIA, PA	12/01/21 10:45	12/01/21
L2165918-09	PB-663-16-6.0-6.5	SOIL	PHILADELPHIA, PA	12/01/21 10:50	12/01/21
L2165918-10	PB-663-17-0.0-0.5	SOIL	PHILADELPHIA, PA	12/01/21 11:20	12/01/21
L2165918-11	PB-663-17-6.0-6.5	SOIL	PHILADELPHIA, PA	12/01/21 11:30	12/01/21

Project Name:	PES REFINERY-DELINEATION	**Lab Number:**	L2165918
Project Number:	200.00135.005.03	**Report Date:**	12/23/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	PES REFINERY-DELINEATION	**Lab Number:**	L2165918
Project Number:	200.00135.005.03	**Report Date:**	12/23/21

Case Narrative (continued)

Report Submission

December 23, 2021: This final report includes the results of the Lead analysis performed on L2165918-03.

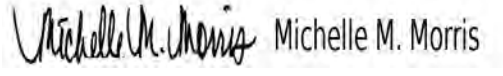
December 08, 2021: This is a preliminary report.

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Total Metals

L2165918-03: The sample has an elevated detection limit for lead due to the dilution required by matrix interferences encountered during analysis.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Michelle M. Morris

Title: Technical Director/Representative Date: 12/23/21

ORGANICS

VOLATILES

Project Name: PES REFINERY-DELINEATION **Lab Number:** L2165918

Project Number: 200.00135.005.03 **Report Date:** 12/23/21

SAMPLE RESULTS

Lab ID: L2165918-04
Client ID: PB-666-20R-0.0-0.5
Sample Location: PHILADELPHIA, PA

Date Collected: 12/01/21 09:50
Date Received: 12/01/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 12/04/21 15:51
Analyst: NLK
Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Benzene	ND		mg/kg	0.00089	0.00030	1
Toluene	0.0043		mg/kg	0.0018	0.00097	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	112		70-130
Toluene-d8	111		70-130
4-Bromofluorobenzene	128		70-130
Dibromofluoromethane	98		70-130

Project Name: PES REFINERY-DELINEATION **Lab Number:** L2165918

Project Number: 200.00135.005.03 **Report Date:** 12/23/21

SAMPLE RESULTS

Lab ID: L2165918-05
Client ID: PB-666-20R-6.0-6.5
Sample Location: PHILADELPHIA, PA

Date Collected: 12/01/21 09:55
Date Received: 12/01/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 12/04/21 16:16
Analyst: NLK
Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Benzene	ND		mg/kg	0.00084	0.00028	1
Toluene	0.0062		mg/kg	0.0017	0.00091	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	109		70-130
4-Bromofluorobenzene	127		70-130
Dibromofluoromethane	96		70-130

Project Name: PES REFINERY-DELINEATION **Lab Number:** L2165918

Project Number: 200.00135.005.03 **Report Date:** 12/23/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 12/04/21 09:09
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 04-05 Batch: WG1579392-5					
Benzene	ND		mg/kg	0.00050	0.00017
Toluene	ND		mg/kg	0.0010	0.00054

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	115		70-130
Dibromofluoromethane	94		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PES REFINERY-DELINEATION

Project Number: 200.00135.005.03

Lab Number: L2165918

Report Date: 12/23/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 04-05 Batch: WG1579392-3 WG1579392-4								
Benzene	107		104		70-130	3		30
Toluene	114		110		70-130	4		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	109		108		70-130
Toluene-d8	107		107		70-130
4-Bromofluorobenzene	106		109		70-130
Dibromofluoromethane	93		93		70-130

METALS

Project Name: PES REFINERY-DELINEATION
Lab Number: L2165918
Project Number: 200.00135.005.03
Report Date: 12/23/21

SAMPLE RESULTS

Lab ID: L2165918-01
Client ID: PB-666-21R-0.0-0.5
Sample Location: PHILADELPHIA, PA
Date Collected: 12/01/21 09:15
Date Received: 12/01/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3340		mg/kg	2.38	0.128	1	12/06/21 20:20	12/08/21 13:03	EPA 3050B	1,6010D	EW

Project Name: PES REFINERY-DELINEATION
Lab Number: L2165918
Project Number: 200.00135.005.03
Report Date: 12/23/21

SAMPLE RESULTS

Lab ID: L2165918-02
Client ID: PB-666-21R-6.0-6.5
Sample Location: PHILADELPHIA, PA

Date Collected: 12/01/21 09:20
Date Received: 12/01/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 43%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	8990		mg/kg	9.01	0.483	2	12/06/21 20:20	12/08/21 13:08	EPA 3050B	1,6010D	EW

Project Name: PES REFINERY-DELINEATION
Lab Number: L2165918
Project Number: 200.00135.005.03
Report Date: 12/23/21

SAMPLE RESULTS

Lab ID: L2165918-03
Client ID: PB-666-21R-14.5-15.0
Sample Location: PHILADELPHIA, PA

Date Collected: 12/01/21 09:25
Date Received: 12/01/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	19.3		mg/kg	11.8	0.633	5	12/22/21 06:10	12/23/21 12:50	EPA 3050B	1,6010D	EW

Project Name: PES REFINERY-DELINEATION
Lab Number: L2165918
Project Number: 200.00135.005.03
Report Date: 12/23/21

SAMPLE RESULTS

Lab ID: L2165918-07
Client ID: PB-663-16-0.0-0.5
Sample Location: PHILADELPHIA, PA

Date Collected: 12/01/21 10:40
Date Received: 12/01/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 65%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	621		mg/kg	3.02	0.162	1	12/06/21 20:20	12/08/21 13:13	EPA 3050B	1,6010D	EW

Project Name: PES REFINERY-DELINEATION
Lab Number: L2165918
Project Number: 200.00135.005.03
Report Date: 12/23/21

SAMPLE RESULTS

Lab ID: L2165918-08
Client ID: PB-663-16-3.0-3.5
Sample Location: PHILADELPHIA, PA

Date Collected: 12/01/21 10:45
Date Received: 12/01/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 76%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	234		mg/kg	2.53	0.136	1	12/06/21 20:20	12/08/21 13:18	EPA 3050B	1,6010D	EW

Project Name: PES REFINERY-DELINEATION
Lab Number: L2165918
Project Number: 200.00135.005.03
Report Date: 12/23/21

SAMPLE RESULTS

Lab ID: L2165918-09
Client ID: PB-663-16-6.0-6.5
Sample Location: PHILADELPHIA, PA

Date Collected: 12/01/21 10:50
Date Received: 12/01/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 72%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	87.1		mg/kg	2.71	0.145	1	12/06/21 20:20	12/08/21 13:23	EPA 3050B	1,6010D	EW

Project Name: PES REFINERY-DELINEATION
Lab Number: L2165918
Project Number: 200.00135.005.03
Report Date: 12/23/21

SAMPLE RESULTS

Lab ID: L2165918-10
Client ID: PB-663-17-0.0-0.5
Sample Location: PHILADELPHIA, PA

Date Collected: 12/01/21 11:20
Date Received: 12/01/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 68%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	508		mg/kg	2.92	0.157	1	12/06/21 20:20	12/08/21 13:29	EPA 3050B	1,6010D	EW

Project Name: PES REFINERY-DELINEATION
Lab Number: L2165918
Project Number: 200.00135.005.03
Report Date: 12/23/21

SAMPLE RESULTS

Lab ID: L2165918-11
Client ID: PB-663-17-6.0-6.5
Sample Location: PHILADELPHIA, PA

Date Collected: 12/01/21 11:30
Date Received: 12/01/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 69%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	156		mg/kg	2.79	0.149	1	12/06/21 20:20	12/08/21 13:34	EPA 3050B	1,6010D	EW

Project Name: PES REFINERY-DELINEATION **Lab Number:** L2165918

Project Number: 200.00135.005.03 **Report Date:** 12/23/21

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-02,07-11 Batch: WG1579583-1										
Lead, Total	ND		mg/kg	2.00	0.107	1	12/06/21 20:20	12/08/21 11:50	1,6010D	EW

Prep Information

Digestion Method: EPA 3050B

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 03 Batch: WG1585691-1										
Lead, Total	ND		mg/kg	2.00	0.107	1	12/22/21 06:10	12/23/21 09:11	1,6010D	EW

Prep Information

Digestion Method: EPA 3050B

Lab Control Sample Analysis

Batch Quality Control

Project Name: PES REFINERY-DELINEATION

Project Number: 200.00135.005.03

Lab Number: L2165918

Report Date: 12/23/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-02,07-11 Batch: WG1579583-2 SRM Lot Number: D109-540								
Lead, Total	88		-		72-128	-		
Total Metals - Mansfield Lab Associated sample(s): 03 Batch: WG1585691-2 SRM Lot Number: D113-540								
Lead, Total	89		-		72-128	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: PES REFINERY-DELINEATION
Project Number: 200.00135.005.03

Lab Number: L2165918
Report Date: 12/23/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-02,07-11 QC Batch ID: WG1579583-3 QC Sample: L2165740-01 Client ID: MS Sample												
Lead, Total	131	45.5	134	**7**	Q	-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 03 QC Batch ID: WG1585691-3 QC Sample: L2168094-05 Client ID: MS Sample												
Lead, Total	16.8	46.2	45.6	**62**	Q	-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PES REFINERY-DELINEATION

Project Number: 200.00135.005.03

Lab Number: L2165918

Report Date: 12/23/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-02,07-11 QC Batch ID: WG1579583-4 QC Sample: L2165740-01 Client ID: DUP Sample						
Lead, Total	131	206	mg/kg	**45**	Q	20
Total Metals - Mansfield Lab Associated sample(s): 03 QC Batch ID: WG1585691-4 QC Sample: L2168094-05 Client ID: DUP Sample						
Lead, Total	16.8	15.5	mg/kg	8		20

Project Name: PES REFINERY-DELINEATION
Project Number: 200.00135.005.03

Lab Serial Dilution Analysis
Batch Quality Control

Lab Number: L2165918
Report Date: 12/23/21

Parameter	Native Sample	Serial Dilution	Units	% D	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-02,07-11 QC Batch ID: WG1579583-6 QC Sample: L2165740-01 Client ID: DUP Sample						
Lead, Total	131	164	mg/kg	**25**	Q	20

INORGANICS
&
MISCELLANEOUS

Project Name: PES REFINERY-DELINEATION
Project Number: 200.00135.005.03
Lab Number: L2165918
Report Date: 12/23/21

SAMPLE RESULTS

Lab ID: L2165918-01
Client ID: PB-666-21R-0.0-0.5
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 12/01/21 09:15
Date Received: 12/01/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.2		%	0.100	NA	1	-	12/02/21 10:40	121,2540G	RI

Project Name: PES REFINERY-DELINEATION
Project Number: 200.00135.005.03
Lab Number: L2165918
Report Date: 12/23/21

SAMPLE RESULTS

Lab ID: L2165918-02
Client ID: PB-666-21R-6.0-6.5
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 12/01/21 09:20
Date Received: 12/01/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	43.0		%	0.100	NA	1	-	12/02/21 10:40	121,2540G	RI

Project Name: PES REFINERY-DELINEATION
Project Number: 200.00135.005.03
Lab Number: L2165918
Report Date: 12/23/21

SAMPLE RESULTS

Lab ID: L2165918-03
Client ID: PB-666-21R-14.5-15.0
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 12/01/21 09:25
Date Received: 12/01/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.8		%	0.100	NA	1	-	12/10/21 12:19	121,2540G	RI

Project Name: PES REFINERY-DELINEATION
Project Number: 200.00135.005.03
Lab Number: L2165918
Report Date: 12/23/21

SAMPLE RESULTS

Lab ID: L2165918-04
Client ID: PB-666-20R-0.0-0.5
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 12/01/21 09:50
Date Received: 12/01/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.0		%	0.100	NA	1	-	12/02/21 10:40	121,2540G	RI

Project Name: PES REFINERY-DELINEATION
Project Number: 200.00135.005.03
Lab Number: L2165918
Report Date: 12/23/21

SAMPLE RESULTS

Lab ID: L2165918-05
Client ID: PB-666-20R-6.0-6.5
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 12/01/21 09:55
Date Received: 12/01/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	78.6		%	0.100	NA	1	-	12/02/21 10:40	121,2540G	RI

Project Name: PES REFINERY-DELINEATION
Project Number: 200.00135.005.03
Lab Number: L2165918
Report Date: 12/23/21

SAMPLE RESULTS

Lab ID: L2165918-07
Client ID: PB-663-16-0.0-0.5
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 12/01/21 10:40
Date Received: 12/01/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	65.1		%	0.100	NA	1	-	12/02/21 10:40	121,2540G	RI

Project Name: PES REFINERY-DELINEATION
Project Number: 200.00135.005.03
Lab Number: L2165918
Report Date: 12/23/21

SAMPLE RESULTS

Lab ID: L2165918-08
Client ID: PB-663-16-3.0-3.5
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 12/01/21 10:45
Date Received: 12/01/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	75.6		%	0.100	NA	1	-	12/02/21 10:40	121,2540G	RI

Project Name: PES REFINERY-DELINEATION
Project Number: 200.00135.005.03
Lab Number: L2165918
Report Date: 12/23/21

SAMPLE RESULTS

Lab ID: L2165918-09
Client ID: PB-663-16-6.0-6.5
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 12/01/21 10:50
Date Received: 12/01/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	71.7		%	0.100	NA	1	-	12/02/21 10:40	121,2540G	RI

Project Name: PES REFINERY-DELINEATION
Project Number: 200.00135.005.03
Lab Number: L2165918
Report Date: 12/23/21

SAMPLE RESULTS

Lab ID: L2165918-10
Client ID: PB-663-17-0.0-0.5
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 12/01/21 11:20
Date Received: 12/01/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	67.6		%	0.100	NA	1	-	12/02/21 10:40	121,2540G	RI

Project Name: PES REFINERY-DELINEATION
Project Number: 200.00135.005.03
Lab Number: L2165918
Report Date: 12/23/21

SAMPLE RESULTS

Lab ID: L2165918-11
Client ID: PB-663-17-6.0-6.5
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 12/01/21 11:30
Date Received: 12/01/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	69.2		%	0.100	NA	1	-	12/02/21 10:40	121,2540G	RI

Lab Duplicate Analysis

Batch Quality Control

Project Name: PES REFINERY-DELINEATION

Project Number: 200.00135.005.03

Lab Number: L2165918

Report Date: 12/23/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-02,04-05,07-11 QC Batch ID: WG1578197-1 QC Sample: L2165811-03 Client ID: DUP Sample						
Solids, Total	90.1	89.5	%	1		20
General Chemistry - Westborough Lab Associated sample(s): 03 QC Batch ID: WG1581699-1 QC Sample: L2167863-01 Client ID: DUP Sample						
Solids, Total	89.6	89.4	%	0		20

Project Name: PES REFINERY-DELINEATION
Project Number: 200.00135.005.03

Lab Number: L2165918
Report Date: 12/23/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2165918-01A	Glass 60ml unpreserved split	A	NA		4.6	Y	Absent		PB-TI(180)
L2165918-01B	Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		TS(7)
L2165918-02A	Glass 60ml unpreserved split	A	NA		4.6	Y	Absent		PB-TI(180)
L2165918-02B	Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		TS(7)
L2165918-03A	Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		TS(7)
L2165918-03B	Glass 60ml unpreserved split	A	NA		4.6	Y	Absent		PB-TI(180)
L2165918-04A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2165918-04B	Vial water preserved	A	NA		4.6	Y	Absent	02-DEC-21 09:47	PA-8260HLW(14)
L2165918-04C	Vial water preserved	A	NA		4.6	Y	Absent	02-DEC-21 09:47	PA-8260HLW(14)
L2165918-04D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2165918-05A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2165918-05B	Vial water preserved	A	NA		4.6	Y	Absent	02-DEC-21 09:47	PA-8260HLW(14)
L2165918-05C	Vial water preserved	A	NA		4.6	Y	Absent	02-DEC-21 09:47	PA-8260HLW(14)
L2165918-05D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2165918-06A	Vial MeOH preserved	A	NA		4.6	Y	Absent		HOLD-8260HLW(14)
L2165918-06B	Vial water preserved	A	NA		4.6	Y	Absent	02-DEC-21 09:47	HOLD-8260HLW(14)
L2165918-06C	Vial water preserved	A	NA		4.6	Y	Absent	02-DEC-21 09:47	HOLD-8260HLW(14)
L2165918-06D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		HOLD-WETCHEM()
L2165918-07A	Glass 60ml unpreserved split	A	NA		4.6	Y	Absent		PB-TI(180)
L2165918-07B	Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		TS(7)
L2165918-08A	Glass 60ml unpreserved split	A	NA		4.6	Y	Absent		PB-TI(180)
L2165918-08B	Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		TS(7)
L2165918-09A	Glass 60ml unpreserved split	A	NA		4.6	Y	Absent		PB-TI(180)

*Values in parentheses indicate holding time in days

Project Name: PES REFINERY-DELINEATION
Project Number: 200.00135.005.03

Lab Number: L2165918
Report Date: 12/23/21

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2165918-09B	Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		TS(7)
L2165918-10A	Glass 60ml unpreserved split	A	NA		4.6	Y	Absent		PB-TI(180)
L2165918-10B	Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		TS(7)
L2165918-11A	Glass 60ml unpreserved split	A	NA		4.6	Y	Absent		PB-TI(180)
L2165918-11B	Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		TS(7)

*Values in parentheses indicate holding time in days

Project Name:	PES REFINERY-DELINEATION	**Lab Number:**	L2165918
Project Number:	200.00135.005.03	**Report Date:**	12/23/21

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	PES REFINERY-DELINEATION	**Lab Number:**	L2165918
Project Number:	200.00135.005.03	**Report Date:**	12/23/21

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	PES REFINERY-DELINEATION	**Lab Number:**	L2165918
Project Number:	200.00135.005.03	**Report Date:**	12/23/21

Data Qualifiers

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers

Project Name:	PES REFINERY-DELINEATION	**Lab Number:**	L2165918
Project Number:	200.00135.005.03	**Report Date:**	12/23/21

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

2

CHAIN OF CUSTODY

PAGE 1 OF 2

ALPHA ANALYTICAL

Westborough, MA TEL: 508-898-9220 FAX: 508-898-9193
Mansfield, MA TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 12/2/21 | ALPHA Job #: L2165918

Report Information — ☐ FAX ☒ ADEx | **Data Deliverables** — ☒ EMAIL ☐ Add'l Deliverables | **Billing Information** — ☒ Same as Client info | PO #: 3894

Regulatory Requirements/Report Limits

State/Fed Program	Criteria
PADEP Storage Tank Sampling	

Client Information

Client: Ransom Consulting, LLC
Address: 2127 Hamilton Avenue
Trenton, NJ 08619
Phone: 215-901-4974
Fax:
Email: William.Schmidt@ransomenv.com
☐ These samples have been Previously analyzed by Alpha

Project Information

Project Name: PES Refinery - Delineation
Project Location: Philadelphia, PA
Project #: 200.00135.005.03
Project Manager: William Schmidt
ALPHA Quote #: 13161

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)
Due Date: Time:

Other Project Specific Requirements/Comments/Detection Limits:
Report only project-specific analyte list per attached TS
Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

ANALYSIS

SAMPLE HANDLING
Filtration
☐ Done ☒ Not Needed ☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	Lead	Benzene	Toluene	Benzo(a)pyrene	Benzo(b)fluoranthene	Naphthalene							Sample Specific Comments	TOTAL # BOTTLES
65918-01	PB-666-Z1R-0.0-0.5	12/1	0915	S	TS	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		1
-02	PB-666-Z1R-6.0-6.5		0920	S	TS	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		1
-03	PB-666-Z1R-14.5-15.0		0925	S	TS	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	HOLD	1
-04	PB-666-Z0R-0.0-0.5		0950	S	TS	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐		4
-05	PB-666-Z0R-6.0-6.5		0955	S	TS	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐		4
-06	PB-666-Z0R-14.5-15.0		1000	S	TS	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	HOLD	4
-07	PB-663-16-0.0-0.5		1040	S	TS	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		1
-08	PB-663-16-3.0-3.5		1045	S	TS	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		1
-09	PB-663-16-6.0-6.5		1050	S	TS	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		1
-10	PB-663-17-0.0-0.5		1120	S	TS	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		1
	Container Type					2oz	250ml	250ml	-	-	-	-	-	-	-	-	-		
	Preservative					-	HCl	NaOH	-	-	-	-	-	-	-	-	-		

Relinquished By:	Date/Time	Received By:	Date/Time
	12/1 1530		12/1/21 1530
	12/1/21 1800		12/1/21 1800
	12-1-21 2400	Paul Mazzella	12/1/21 2400
Paul Mazzella	12/2/21 0128		12/2/21 0138

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

FORM NO. 01-01(HCL) rev. 2-JAN-12)

CHAIN OF CUSTODY

PAGE 2 OF 2

ALPHA ANALYTICAL

Westborough, MA
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA
TEL: 508-822-9300
FAX: 508-822-3288

Date Rec'd in Lab: 12/2/21

ALPHA Job #: L2165918

Project Information

Project Name: PES Refinery - Delineation

Project Location: Philadelphia, PA

Project #: 200.00135.005.03

Project Manager: William Schmidt

ALPHA Quote #: 13161

Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

☐ These samples have been Previously analyzed by Alpha

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Report Information Data Deliverables

☐ FAX ☒ EMAIL

☒ ADEx ☐ Add'l Deliverables

Billing Information

☒ Same as Client info

PO #: 3894

Regulatory Requirements/Report Limits

State/Fed Program	Criteria
PADEP Storage Tank Sampling	

Other Project Specific Requirements/Comments/Detection Limits:

Report only project-specific analyte list ~~per attached~~ TS

Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

ANALYSIS

SAMPLE HANDLING
Filtration
☐ Done
☒ Not Needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	Lead	Benzene	Toluene	Benzo(a)pyrene	Benzo(b)fluoranthene	Naphthalene							Sample Specific Comments	TOTAL # BOTTLES
65918-11	PB-663-17-6.0-6.5	12/1	1130	S	TS	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		1

Container Type	-
Preservative	-

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	12/1 1530	[signature]	12/1/21 1530
[signature]	12/1/21 1800	[signature]	12-1-21 1800
[signature]	12-1 2100	Paul Mazzella	12/1/21 2100

Paul Mazzella 12/2/21 0138 [signature] 12/2/21 0138

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

FORM NO: 01-01(I)(NJ) (rev. 6-JAN-12)

ANALYTICAL REPORT

Lab Number:	L2202565
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY AST CLOS
Project Number:	200.00135.005.03
Report Date:	01/21/22

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: PHILADELPHIA REFINERY AST CLOS
Project Number: 200.00135.005.03

Lab Number: L2202565
Report Date: 01/21/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2202565-01	PB-663-15-14.5-15.0	SOIL	PHILADELPHIA, PA	01/17/22 11:00	01/17/22
L2202565-02	PB-666-05	SOIL	PHILADELPHIA, PA	01/17/22 11:10	01/17/22
L2202565-03	PB-666-08	SOIL	PHILADELPHIA, PA	01/17/22 11:25	01/17/22
L2202565-04	PB-666-09	SOIL	PHILADELPHIA, PA	01/17/22 11:35	01/17/22
L2202565-05	PB-666-10	SOIL	PHILADELPHIA, PA	01/17/22 11:45	01/17/22
L2202565-06	PB-666-13	SOIL	PHILADELPHIA, PA	01/17/22 12:00	01/17/22

Project Name:	PHILADELPHIA REFINERY AST CLOS	**Lab Number:**	L2202565
Project Number:	200.00135.005.03	**Report Date:**	01/21/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	PHILADELPHIA REFINERY AST CLOS	**Lab Number:**	L2202565
Project Number:	200.00135.005.03	**Report Date:**	01/21/22

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Sample Receipt

The analyses performed were specified by the client.

Semivolatile Organics

L2202565-02, -03, -05, and -06: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Caitlin Walukevich

Caitlin Walukevich

Title: Technical Director/Representative

Date: 01/21/22

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY AST CLOS
Lab Number: L2202565
Project Number: 200.00135.005.03
Report Date: 01/21/22

SAMPLE RESULTS

Lab ID: L2202565-02
Client ID: PB-666-05
Sample Location: PHILADELPHIA, PA
Date Collected: 01/17/22 11:10
Date Received: 01/17/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 01/20/22 14:46
Analyst: LAC
Percent Solids: 77%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0028	0.00028	1
Benzene	ND		mg/kg	0.00070	0.00023	1
1,2-Dichloroethane	ND		mg/kg	0.0014	0.00036	1
Toluene	ND		mg/kg	0.0014	0.00077	1
1,2-Dibromoethane	ND		mg/kg	0.00070	0.00041	1
Ethylbenzene	ND		mg/kg	0.0014	0.00020	1
p/m-Xylene	ND		mg/kg	0.0028	0.00079	1
o-Xylene	ND		mg/kg	0.0014	0.00041	1
Xylenes, Total	ND		mg/kg	0.0014	0.00041	1
Isopropylbenzene	ND		mg/kg	0.0014	0.00015	1
1,3,5-Trimethylbenzene	0.00074	J	mg/kg	0.0028	0.00027	1
1,2,4-Trimethylbenzene	0.0011	J	mg/kg	0.0028	0.00047	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	102		70-130

Project Name: PHILADELPHIA REFINERY AST CLOS **Lab Number:** L2202565

Project Number: 200.00135.005.03 **Report Date:** 01/21/22

SAMPLE RESULTS

Lab ID: L2202565-03
Client ID: PB-666-08
Sample Location: PHILADELPHIA, PA

Date Collected: 01/17/22 11:25
Date Received: 01/17/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 01/18/22 13:31
Analyst: JC
Percent Solids: 69%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0032	0.00032	1
Benzene	ND		mg/kg	0.00080	0.00026	1
1,2-Dichloroethane	ND		mg/kg	0.0016	0.00041	1
Toluene	0.0051		mg/kg	0.0016	0.00087	1
1,2-Dibromoethane	ND		mg/kg	0.00080	0.00047	1
Ethylbenzene	0.00083	J	mg/kg	0.0016	0.00022	1
p/m-Xylene	0.0055		mg/kg	0.0032	0.00089	1
o-Xylene	0.0042		mg/kg	0.0016	0.00046	1
Xylenes, Total	0.0097		mg/kg	0.0016	0.00046	1
Isopropylbenzene	0.00058	J	mg/kg	0.0016	0.00017	1
1,3,5-Trimethylbenzene	0.0043		mg/kg	0.0032	0.00031	1
1,2,4-Trimethylbenzene	0.0065		mg/kg	0.0032	0.00053	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	108		70-130
4-Bromofluorobenzene	123		70-130
Dibromofluoromethane	116		70-130

Project Name: PHILADELPHIA REFINERY AST CLOS **Lab Number:** L2202565

Project Number: 200.00135.005.03 **Report Date:** 01/21/22

SAMPLE RESULTS

Lab ID: L2202565-04 Date Collected: 01/17/22 11:35
Client ID: PB-666-09 Date Received: 01/17/22
Sample Location: PHILADELPHIA, PA Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 01/18/22 13:54
Analyst: JC
Percent Solids: 71%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0029	0.00030	1
Benzene	0.0020		mg/kg	0.00074	0.00024	1
1,2-Dichloroethane	ND		mg/kg	0.0015	0.00038	1
Toluene	ND		mg/kg	0.0015	0.00080	1
1,2-Dibromoethane	ND		mg/kg	0.00074	0.00043	1
Ethylbenzene	ND		mg/kg	0.0015	0.00021	1
p/m-Xylene	0.0012	J	mg/kg	0.0029	0.00082	1
o-Xylene	0.00053	J	mg/kg	0.0015	0.00043	1
Xylenes, Total	0.0017	J	mg/kg	0.0015	0.00043	1
Isopropylbenzene	0.00020	J	mg/kg	0.0015	0.00016	1
1,3,5-Trimethylbenzene	0.00044	J	mg/kg	0.0029	0.00028	1
1,2,4-Trimethylbenzene	0.00089	J	mg/kg	0.0029	0.00049	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	116		70-130
Toluene-d8	109		70-130
4-Bromofluorobenzene	126		70-130
Dibromofluoromethane	117		70-130

Project Name: PHILADELPHIA REFINERY AST CLOS **Lab Number:** L2202565

Project Number: 200.00135.005.03 **Report Date:** 01/21/22

SAMPLE RESULTS

Lab ID: L2202565-05
Client ID: PB-666-10
Sample Location: PHILADELPHIA, PA

Date Collected: 01/17/22 11:45
Date Received: 01/17/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 01/18/22 14:17
Analyst: JC
Percent Solids: 72%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0037	0.00037	1
Benzene	0.0017		mg/kg	0.00092	0.00031	1
1,2-Dichloroethane	ND		mg/kg	0.0018	0.00047	1
Toluene	0.0038		mg/kg	0.0018	0.0010	1
1,2-Dibromoethane	ND		mg/kg	0.00092	0.00054	1
Ethylbenzene	ND		mg/kg	0.0018	0.00026	1
p/m-Xylene	ND		mg/kg	0.0037	0.0010	1
o-Xylene	ND		mg/kg	0.0018	0.00054	1
Xylenes, Total	ND		mg/kg	0.0018	0.00054	1
Isopropylbenzene	0.00051	J	mg/kg	0.0018	0.00020	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0037	0.00036	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0037	0.00062	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	116		70-130
Dibromofluoromethane	116		70-130

Project Name: PHILADELPHIA REFINERY AST CLOS **Lab Number:** L2202565

Project Number: 200.00135.005.03 **Report Date:** 01/21/22

SAMPLE RESULTS

Lab ID: L2202565-06 Date Collected: 01/17/22 12:00
Client ID: PB-666-13 Date Received: 01/17/22
Sample Location: PHILADELPHIA, PA Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 01/20/22 15:38
Analyst: AJK
Percent Solids: 71%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0036	0.00036	1
Benzene	0.0034		mg/kg	0.00090	0.00030	1
1,2-Dichloroethane	ND		mg/kg	0.0018	0.00046	1
Toluene	ND		mg/kg	0.0018	0.00097	1
1,2-Dibromoethane	ND		mg/kg	0.00090	0.00053	1
Ethylbenzene	ND		mg/kg	0.0018	0.00025	1
p/m-Xylene	ND		mg/kg	0.0036	0.0010	1
o-Xylene	ND		mg/kg	0.0018	0.00052	1
Xylenes, Total	ND		mg/kg	0.0018	0.00052	1
Isopropylbenzene	0.0015	J	mg/kg	0.0018	0.00020	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0036	0.00035	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0036	0.00060	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	111		70-130
Dibromofluoromethane	101		70-130

Project Name: PHILADELPHIA REFINERY AST CLOS **Lab Number:** L2202565

Project Number: 200.00135.005.03 **Report Date:** 01/21/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 01/18/22 12:46
Analyst: KTD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 03-05 Batch: WG1595759-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	117		70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	112		70-130
Dibromofluoromethane	113		70-130

Project Name: PHILADELPHIA REFINERY AST CLOS **Lab Number:** L2202565

Project Number: 200.00135.005.03 **Report Date:** 01/21/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 01/20/22 07:29
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 02,06 Batch: WG1596408-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	99		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY AST CLOS

Project Number: 200.00135.005.03

Lab Number: L2202565

Report Date: 01/21/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 03-05 Batch: WG1595759-3 WG1595759-4								
Methyl tert butyl ether	91		88		66-130	3		30
Benzene	84		84		70-130	0		30
1,2-Dichloroethane	90		92		70-130	2		30
Toluene	85		82		70-130	4		30
1,2-Dibromoethane	96		90		70-130	6		30
Ethylbenzene	87		86		70-130	1		30
p/m-Xylene	89		88		70-130	1		30
o-Xylene	91		90		70-130	1		30
Isopropylbenzene	88		85		70-130	3		30
1,3,5-Trimethylbenzene	88		85		70-130	3		30
1,2,4-Trimethylbenzene	87		84		70-130	4		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	113		115		70-130
Toluene-d8	107		105		70-130
4-Bromofluorobenzene	106		103		70-130
Dibromofluoromethane	106		112		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY AST CLOS

Project Number: 200.00135.005.03

Lab Number: L2202565

Report Date: 01/21/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 02,06 Batch: WG1596408-3 WG1596408-4								
Methyl tert butyl ether	89		87		66-130	2		30
Benzene	91		92		70-130	1		30
1,2-Dichloroethane	96		95		70-130	1		30
Toluene	90		92		70-130	2		30
1,2-Dibromoethane	87		85		70-130	2		30
Ethylbenzene	92		93		70-130	1		30
p/m-Xylene	93		94		70-130	1		30
o-Xylene	93		94		70-130	1		30
Isopropylbenzene	94		96		70-130	2		30
1,3,5-Trimethylbenzene	93		95		70-130	2		30
1,2,4-Trimethylbenzene	94		95		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	105		105		70-130
Toluene-d8	104		104		70-130
4-Bromofluorobenzene	102		101		70-130
Dibromofluoromethane	100		99		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY AST CLOS
Lab Number: L2202565
Project Number: 200.00135.005.03
Report Date: 01/21/22

SAMPLE RESULTS

Lab ID: L2202565-02
Client ID: PB-666-05
Sample Location: PHILADELPHIA, PA

Date Collected: 01/17/22 11:10
Date Received: 01/17/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 01/19/22 18:47
Analyst: WR
Percent Solids: 77%

Extraction Method: EPA 3546
Extraction Date: 01/18/22 16:08

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.64	0.078	1
Fluorene	ND		mg/kg	0.64	0.063	1
Phenanthrene	0.099	J	mg/kg	0.39	0.078	1
Anthracene	ND		mg/kg	0.39	0.12	1
Pyrene	0.55		mg/kg	0.39	0.064	1
Benzo(a)anthracene	0.40		mg/kg	0.39	0.073	1
Chrysene	0.22	J	mg/kg	0.39	0.067	1
Benzo(b)fluoranthene	0.40		mg/kg	0.39	0.11	1
Benzo(a)pyrene	0.35	J	mg/kg	0.52	0.16	1
Benzo(ghi)perylene	0.21	J	mg/kg	0.52	0.076	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	67		30-120
4-Terphenyl-d14	52		18-120

Project Name: PHILADELPHIA REFINERY AST CLOS
Lab Number: L2202565
Project Number: 200.00135.005.03
Report Date: 01/21/22

SAMPLE RESULTS

Lab ID: L2202565-03
Client ID: PB-666-08
Sample Location: PHILADELPHIA, PA

Date Collected: 01/17/22 11:25
Date Received: 01/17/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 01/19/22 19:11
Analyst: WR
Percent Solids: 69%

Extraction Method: EPA 3546
Extraction Date: 01/18/22 16:08

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.71	0.086	1
Fluorene	ND		mg/kg	0.71	0.069	1
Phenanthrene	ND		mg/kg	0.43	0.086	1
Anthracene	ND		mg/kg	0.43	0.14	1
Pyrene	ND		mg/kg	0.43	0.070	1
Benzo(a)anthracene	ND		mg/kg	0.43	0.080	1
Chrysene	ND		mg/kg	0.43	0.074	1
Benzo(b)fluoranthene	ND		mg/kg	0.43	0.12	1
Benzo(a)pyrene	ND		mg/kg	0.57	0.17	1
Benzo(ghi)perylene	ND		mg/kg	0.57	0.084	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	85		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	66		18-120

Project Name: PHILADELPHIA REFINERY AST CLOS
Lab Number: L2202565
Project Number: 200.00135.005.03
Report Date: 01/21/22

SAMPLE RESULTS

Lab ID: L2202565-04
Client ID: PB-666-09
Sample Location: PHILADELPHIA, PA

Date Collected: 01/17/22 11:35
Date Received: 01/17/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 01/19/22 19:36
Analyst: WR
Percent Solids: 71%

Extraction Method: EPA 3546
Extraction Date: 01/18/22 16:08

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.23	0.028	1
Fluorene	ND		mg/kg	0.23	0.022	1
Phenanthrene	ND		mg/kg	0.14	0.028	1
Anthracene	ND		mg/kg	0.14	0.045	1
Pyrene	ND		mg/kg	0.14	0.023	1
Benzo(a)anthracene	ND		mg/kg	0.14	0.026	1
Chrysene	ND		mg/kg	0.14	0.024	1
Benzo(b)fluoranthene	ND		mg/kg	0.14	0.039	1
Benzo(a)pyrene	ND		mg/kg	0.18	0.057	1
Benzo(ghi)perylene	ND		mg/kg	0.18	0.027	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	87		23-120
2-Fluorobiphenyl	82		30-120
4-Terphenyl-d14	79		18-120

Project Name: PHILADELPHIA REFINERY AST CLOS
Lab Number: L2202565
Project Number: 200.00135.005.03
Report Date: 01/21/22

SAMPLE RESULTS

Lab ID: L2202565-05
Client ID: PB-666-10
Sample Location: PHILADELPHIA, PA

Date Collected: 01/17/22 11:45
Date Received: 01/17/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 01/19/22 20:00
Analyst: WR
Percent Solids: 72%

Extraction Method: EPA 3546
Extraction Date: 01/18/22 16:08

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.66	0.080	1
Fluorene	ND		mg/kg	0.66	0.064	1
Phenanthrene	ND		mg/kg	0.40	0.080	1
Anthracene	ND		mg/kg	0.40	0.13	1
Pyrene	ND		mg/kg	0.40	0.066	1
Benzo(a)anthracene	ND		mg/kg	0.40	0.074	1
Chrysene	ND		mg/kg	0.40	0.069	1
Benzo(b)fluoranthene	ND		mg/kg	0.40	0.11	1
Benzo(a)pyrene	ND		mg/kg	0.53	0.16	1
Benzo(ghi)perylene	ND		mg/kg	0.53	0.078	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	83		23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	66		18-120

Project Name: PHILADELPHIA REFINERY AST CLOS
Lab Number: L2202565
Project Number: 200.00135.005.03
Report Date: 01/21/22

SAMPLE RESULTS

Lab ID: L2202565-06
Client ID: PB-666-13
Sample Location: PHILADELPHIA, PA

Date Collected: 01/17/22 12:00
Date Received: 01/17/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 01/19/22 20:25
Analyst: WR
Percent Solids: 71%

Extraction Method: EPA 3546
Extraction Date: 01/18/22 16:08

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.69	0.084	1
Fluorene	ND		mg/kg	0.69	0.067	1
Phenanthrene	ND		mg/kg	0.41	0.084	1
Anthracene	ND		mg/kg	0.41	0.13	1
Pyrene	0.52		mg/kg	0.41	0.068	1
Benzo(a)anthracene	0.30	J	mg/kg	0.41	0.077	1
Chrysene	0.28	J	mg/kg	0.41	0.071	1
Benzo(b)fluoranthene	0.91		mg/kg	0.41	0.12	1
Benzo(a)pyrene	0.57		mg/kg	0.55	0.17	1
Benzo(ghi)perylene	1.3		mg/kg	0.55	0.081	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	75		18-120

Project Name: PHILADELPHIA REFINERY AST CLOS
Project Number: 200.00135.005.03
Lab Number: L2202565
Report Date: 01/21/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 01/19/22 10:21
Analyst: WR

Extraction Method: EPA 3546
Extraction Date: 01/18/22 16:08

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02-06 Batch: WG1595353-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	62		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	68		18-120

Lab Control Sample Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY AST CLOS
Project Number: 200.00135.005.03

Lab Number: L2202565
Report Date: 01/21/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02-06 Batch: WG1595353-2 WG1595353-3								
Naphthalene	87		68		40-140	25		50
Fluorene	90		73		40-140	21		50
Phenanthrene	88		71		40-140	21		50
Anthracene	88		70		40-140	23		50
Pyrene	88		72		35-142	20		50
Benzo(a)anthracene	94		78		40-140	19		50
Chrysene	88		74		40-140	17		50
Benzo(b)fluoranthene	93		78		40-140	18		50
Benzo(a)pyrene	89		74		40-140	18		50
Benzo(ghi)perylene	101		83		40-140	20		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	83		69		23-120
2-Fluorobiphenyl	82		70		30-120
4-Terphenyl-d14	86		73		18-120

METALS

Project Name: PHILADELPHIA REFINERY AST CLOS
Lab Number: L2202565
Project Number: 200.00135.005.03
Report Date: 01/21/22

SAMPLE RESULTS

Lab ID: L2202565-01
Client ID: PB-663-15-14.5-15.0
Sample Location: PHILADELPHIA, PA

Date Collected: 01/17/22 11:00
Date Received: 01/17/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 59%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	50.6		mg/kg	3.35	0.180	1	01/19/22 07:00	01/19/22 13:06	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY AST CLOS
Lab Number: L2202565
Project Number: 200.00135.005.03
Report Date: 01/21/22

SAMPLE RESULTS

Lab ID: L2202565-02
Client ID: PB-666-05
Sample Location: PHILADELPHIA, PA
Date Collected: 01/17/22 11:10
Date Received: 01/17/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 77%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	54.8		mg/kg	2.53	0.136	1	01/19/22 07:00	01/19/22 13:12	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY AST CLOS
Lab Number: L2202565
Project Number: 200.00135.005.03
Report Date: 01/21/22

SAMPLE RESULTS

Lab ID: L2202565-03
Client ID: PB-666-08
Sample Location: PHILADELPHIA, PA
Date Collected: 01/17/22 11:25
Date Received: 01/17/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 69%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	258		mg/kg	2.83	0.152	1	01/19/22 07:00	01/19/22 13:16	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY AST CLOS
Lab Number: L2202565
Project Number: 200.00135.005.03
Report Date: 01/21/22

SAMPLE RESULTS

Lab ID: L2202565-04
Client ID: PB-666-09
Sample Location: PHILADELPHIA, PA
Date Collected: 01/17/22 11:35
Date Received: 01/17/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 71%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	9.66		mg/kg	2.69	0.144	1	01/19/22 07:00	01/19/22 13:21	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY AST CLOS
Lab Number: L2202565
Project Number: 200.00135.005.03
Report Date: 01/21/22

SAMPLE RESULTS

Lab ID: L2202565-05
Client ID: PB-666-10
Sample Location: PHILADELPHIA, PA
Date Collected: 01/17/22 11:45
Date Received: 01/17/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 72%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	9.14		mg/kg	2.71	0.146	1	01/19/22 07:00	01/19/22 13:26	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY AST CLOS
Lab Number: L2202565
Project Number: 200.00135.005.03
Report Date: 01/21/22

SAMPLE RESULTS

Lab ID: L2202565-06
Client ID: PB-666-13
Sample Location: PHILADELPHIA, PA
Date Collected: 01/17/22 12:00
Date Received: 01/17/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 71%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	176		mg/kg	2.75	0.147	1	01/19/22 07:00	01/19/22 13:31	EPA 3050B	1,6010D	SV

Project Name: PHILADELPHIA REFINERY AST CLOS **Lab Number:** L2202565

Project Number: 200.00135.005.03 **Report Date:** 01/21/22

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-06 Batch: WG1595270-1										
Lead, Total	ND		mg/kg	2.00	0.107	1	01/19/22 07:00	01/19/22 10:41	1,6010D	SV

Prep Information

Digestion Method: EPA 3050B

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY AST CLOS

Project Number: 200.00135.005.03

Lab Number: L2202565

Report Date: 01/21/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-06 Batch: WG1595270-2 SRM Lot Number: D113-540								
Lead, Total	85		-		72-128	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY AST CLOS
Project Number: 200.00135.005.03

Lab Number: L2202565
Report Date: 01/21/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-06 QC Batch ID: WG1595270-3 QC Sample: L2202783-06 Client ID: MS Sample												
Lead, Total	4.41	42.1	35.6	**74**	Q	-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY AST CLOS

Project Number: 200.00135.005.03

Lab Number: L2202565

Report Date: 01/21/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-06 QC Batch ID: WG1595270-4 QC Sample: L2202783-06 Client ID: DUP Sample						
Lead, Total	4.41	4.36	mg/kg	1		20

INORGANICS
&
MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY AST CLOS
Project Number: 200.00135.005.03
Lab Number: L2202565
Report Date: 01/21/22

SAMPLE RESULTS

Lab ID: L2202565-01
Client ID: PB-663-15-14.5-15.0
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 01/17/22 11:00
Date Received: 01/17/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	58.6		%	0.100	NA	1	-	01/18/22 09:15	121,2540G	RI

Project Name: PHILADELPHIA REFINERY AST CLOS
Project Number: 200.00135.005.03
Lab Number: L2202565
Report Date: 01/21/22

SAMPLE RESULTS

Lab ID: L2202565-02
Client ID: PB-666-05
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 01/17/22 11:10
Date Received: 01/17/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	77.0		%	0.100	NA	1	-	01/18/22 09:15	121,2540G	RI

Project Name: PHILADELPHIA REFINERY AST CLOS
Project Number: 200.00135.005.03
Lab Number: L2202565
Report Date: 01/21/22

SAMPLE RESULTS

Lab ID: L2202565-03
Client ID: PB-666-08
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 01/17/22 11:25
Date Received: 01/17/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	69.1		%	0.100	NA	1	-	01/18/22 09:15	121,2540G	RI

Project Name: PHILADELPHIA REFINERY AST CLOS
Project Number: 200.00135.005.03
Lab Number: L2202565
Report Date: 01/21/22

SAMPLE RESULTS

Lab ID: L2202565-04
Client ID: PB-666-09
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 01/17/22 11:35
Date Received: 01/17/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	70.5		%	0.100	NA	1	-	01/18/22 09:15	121,2540G	RI

Project Name: PHILADELPHIA REFINERY AST CLOS
Project Number: 200.00135.005.03
Lab Number: L2202565
Report Date: 01/21/22

SAMPLE RESULTS

Lab ID: L2202565-05
Client ID: PB-666-10
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 01/17/22 11:45
Date Received: 01/17/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	71.5		%	0.100	NA	1	-	01/18/22 09:15	121,2540G	RI

Project Name: PHILADELPHIA REFINERY AST CLOS
Project Number: 200.00135.005.03
Lab Number: L2202565
Report Date: 01/21/22

SAMPLE RESULTS

Lab ID: L2202565-06
Client ID: PB-666-13
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 01/17/22 12:00
Date Received: 01/17/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	70.5		%	0.100	NA	1	-	01/18/22 09:33	121,2540G	RI

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY AST CLOS

Project Number: 200.00135.005.03

Lab Number: L2202565

Report Date: 01/21/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-05 QC Batch ID: WG1595057-1 QC Sample: L2202565-01 Client ID: PB-663-15-14.5-15.0						
Solids, Total	58.6	58.3	%	1		20
General Chemistry - Westborough Lab Associated sample(s): 06 QC Batch ID: WG1595059-1 QC Sample: L2202591-01 Client ID: DUP Sample						
Solids, Total	70.6	67.5	%	4		20

Project Name: PHILADELPHIA REFINERY AST CLOS
Project Number: 200.00135.005.03

Lab Number: L2202565
Report Date: 01/21/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2202565-01A	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		TS(7)
L2202565-01B	Glass 60ml unpreserved split	A	NA		3.2	Y	Absent		PB-TI(180)
L2202565-02A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2202565-02B	Vial water preserved	A	NA		3.2	Y	Absent	18-JAN-22 04:48	PA-8260HLW(14)
L2202565-02C	Vial water preserved	A	NA		3.2	Y	Absent	18-JAN-22 04:48	PA-8260HLW(14)
L2202565-02D	Plastic 120ml unpreserved	A	NA		3.2	Y	Absent		TS(7)
L2202565-02E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2202565-02F	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		PA-PAH(14)
L2202565-03A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2202565-03B	Vial water preserved	A	NA		3.2	Y	Absent	18-JAN-22 04:48	PA-8260HLW(14)
L2202565-03C	Vial water preserved	A	NA		3.2	Y	Absent	18-JAN-22 04:48	PA-8260HLW(14)
L2202565-03D	Plastic 120ml unpreserved	A	NA		3.2	Y	Absent		TS(7)
L2202565-03E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2202565-03F	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		PA-PAH(14)
L2202565-04A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2202565-04B	Vial water preserved	A	NA		3.2	Y	Absent	18-JAN-22 04:48	PA-8260HLW(14)
L2202565-04C	Vial water preserved	A	NA		3.2	Y	Absent	18-JAN-22 04:48	PA-8260HLW(14)
L2202565-04D	Plastic 120ml unpreserved	A	NA		3.2	Y	Absent		TS(7)
L2202565-04E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2202565-04F	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		PA-PAH(14)
L2202565-05A	Vial MeOH preserved	B	NA		3.1	Y	Absent		PA-8260HLW(14)
L2202565-05B	Vial water preserved	B	NA		3.1	Y	Absent	18-JAN-22 04:48	PA-8260HLW(14)

*Values in parentheses indicate holding time in days

Project Name: PHILADELPHIA REFINERY AST CLOS
Project Number: 200.00135.005.03

Lab Number: L2202565
Report Date: 01/21/22

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2202565-05C	Vial water preserved	B	NA		3.1	Y	Absent	18-JAN-22 04:48	PA-8260HLW(14)
L2202565-05D	Plastic 120ml unpreserved	B	NA		3.1	Y	Absent		TS(7)
L2202565-05E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.1	Y	Absent		PB-TI(180)
L2202565-05F	Glass 120ml/4oz unpreserved	B	NA		3.1	Y	Absent		PA-PAH(14)
L2202565-06A	Vial MeOH preserved	B	NA		3.1	Y	Absent		PA-8260HLW(14)
L2202565-06B	Vial water preserved	B	NA		3.1	Y	Absent	18-JAN-22 04:48	PA-8260HLW(14)
L2202565-06C	Vial water preserved	B	NA		3.1	Y	Absent	18-JAN-22 04:48	PA-8260HLW(14)
L2202565-06D	Plastic 120ml unpreserved	B	NA		3.1	Y	Absent		TS(7)
L2202565-06E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.1	Y	Absent		PB-TI(180)
L2202565-06F	Glass 120ml/4oz unpreserved	B	NA		3.1	Y	Absent		PA-PAH(14)

*Values in parentheses indicate holding time in days

Project Name:	PHILADELPHIA REFINERY AST CLOS	**Lab Number:**	L2202565
Project Number:	200.00135.005.03	**Report Date:**	01/21/22

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY AST CLOS	**Lab Number:**	L2202565
Project Number:	200.00135.005.03	**Report Date:**	01/21/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY AST CLOS	**Lab Number:**	L2202565
Project Number:	200.00135.005.03	**Report Date:**	01/21/22

Data Qualifiers

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY AST CLOS	**Lab Number:**	L2202565
Project Number:	200.00135.005.03	**Report Date:**	01/21/22

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

Serial_No:01212211:37

L2202565

CHAIN OF CUSTODY

PAGE 1 OF 1

ALPHA ANALYTICAL

Westborough, MA TEL: 508-898-9220 FAX: 508-898-9193
Mansfield, MA TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 01/18/22

ALPHA Job #: L2202565

Project Information

Project Name: Philadelphia Refinery - AST CLOSURE

Project Location: Philadelphia, PA

Project #: 200.00135.005.03

Project Manager: William Schmidt

ALPHA Quote #: 13161

Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

☐ These samples have been Previously analyzed by Alpha

Turn-Around Time

☒ Standard ☑ Rush (ONLY IF PRE-APPROVED) 4-DAY TAT

Due Date: Time:

Report Information Data Deliverables

☐ FAX ☒ EMAIL

☒ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client Info PO #: 3894

Regulatory Requirements/Report Limits

State/Fed Program | Criteria

Other Project Specific Requirements/Comments/Detection Limits:

Report only project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist (see attached for compounds) Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

ANALYSIS

SAMPLE HANDLING
Filtration ☐ Done ☒ Not Needed ☐ Lab to do
Preservation ☐ Lab to do (Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	PADEP Shortlist 1-5 (see attached)	PADEP Shortlist 1 & 2 (see attached)	PADEP Shortlist 4 (see attached)	PADEP Shortlist 3-5 (see attached)	PADEP Shortlist 5 (see attached)	PADEP Shortlist 6 (see attached)	~~pH~~	~~Benzene~~	~~Cumene~~	~~Tetraethylene Glycol~~	~~VOC portion of PADEP Shortlist~~	LEAD	Sample Specific Comments	TOTAL # BOTTLES
02565-01	PB-663-15-14.5-15.0	1/17	1100	S	TS	~~☑~~	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	ONLY LEAD	1
-02	PB-666-05	↓	1110	S	TS	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		6
-03	PB-666-08	↓	1125	S	TS	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		6
-04	PB-666-09	↓	1135	S	TS	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		6
-05	PB-666-10	↓	1145	S	TS	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		6
-06	PB-666-13	↓	1200	S	TS	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		6
~~-07~~																			

Container Type	G	G	G	-	-	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	1/17 1538	STN AAL	1/17/22 1538
[signature] 1806	1/17/22	[signature]	1/17 1806
[signature]	1/17 2100	[signature]	1/17/22 2200
[signature]	1/18/22 0215	[signature]	1/18/22 0215

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

FORM NO: 01-01(I) (rev. 5-JAN-12)